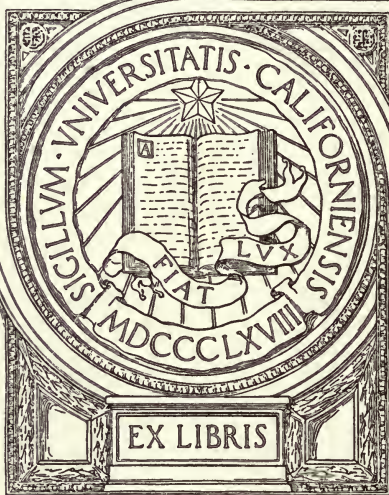


GIFT OF
HORACE W. CARPENTIER



THE



FIBRE PLANTS OF INDIA, AFRICA, AND OUR COLONIES.

A TREATISE ON
RHEEA, PLANTAIN, PINE APPLE, JUTE,
AFRICAN AND CHINA GRASS,
AND NEW ZEALAND FLAX
(PHORMIUM TENAX),

AND ON

THE CULTIVATION, PREPARATION, AND COTTONIZING OF
HOME-GROWN AND CONTINENTAL FLAX AND HEMP
FITTED FOR SPINNING ON THE EXISTING
COTTON MACHINERY,

AND ALSO ON

SILK, WORSTED AND FLAX SPINNING MACHINERY,

WITH FULL

INSTRUCTIONS ON THE METHOD OF PREPARING, SPINNING AND WEAVING,
BY THE PATENTED MACHINES AND PROCESS OF

THE AUTHOR

JAMES H. DICKSON.

LONDON: WILLIAM MACINTOSH, 24, PATERNOSTER ROW.

DUBLIN: GEORGE HERBERT, GRAFTON STREET.

Price 7s. 6d.



SB241
D5

10/5/21

Carpentier

DEDICATED BY PERMISSION TO
THE RIGHT HONOURABLE

The Earl of Derby,

K.G., &c., &c.

MY LORD,

I have to acknowledge with great respect the courtesy with which, in answer to my request, your Lordship granted me the privilege of dedicating this work on the cultivation of Flax, and the preparation of the Fibrous Plants of the East and West Indies, to your Lordship; and has such an honour should have its weight and influence in and upon the consideration of the Members of the Royal Agricultural Society of England, especially at this time, when Flax is more than double the price quoted at any time during the last thirty years, and when Corn is selling at ruinously low prices, I may hope that the substance of this volume will, under such patronage, induce the Landlords and Farming Members of the Royal Agricultural Society to support the object I have in view, namely, a wide circulation of the instructions which the experience of nearly thirty years as a Flax-grower, preparer of Flax, and manufacturer of Linen; also as Flax and Yarn Agent for three-fourths of the Flax-spinning firms in England, enables me to draw up.

The facts, derived from my own experience, have been assiduously collated with the results obtained by many English gentlemen-farmers, who have been induced, by my writings and instructions, to try the cultivation of Flax; and these varied experiences not only establish, by their agreement, the truth and value of my plans, but are found to be in

accordance with the facts and principles embodied in the several "Irish Farmers' Reports." I therefore trust that these inferential *proofs* of the importance of the cultivation of Flax at home, and especially in India, may deserve the serious consideration of your Lordship and colleagues, and that they may obtain such attention from the Legislature as the present exorbitant prices of imported Flax really demands.

Independently of the general argument, there are special reasons why the landowners should patronise and urge the cultivation of Flax; and amongst the most powerful of them is, the necessity for growing the most profitable crop in order that the permanent improvement of the land, by increase of drainage, roads, buildings, &c., may prove to be a remunerating operation, and there is a necessity why landlords and the richer tenants should set an example in cultivating this plant, for farmers generally do not possess the energy or enterprise which marks our merchants and manufacturers, when once satisfied of its profitableness, ready to turn their attention to anything when they require the influence of example, the work of the more wealthy and independent classes, to set them going.

When, however, their attention shall have once been turned to the subject, and experience shall have taught them their true interests, there can be no more doubt of their surpassing the farmers of Belgium and Holland in the cultivation of Flax, than there is of the superiority which they have already attained in the other branches of industry. Undoubtedly, if we could retain, for our own use, or even send forward to British India, the millions of gold we annually pay to our Continental neighbours for Flax, hemp, linseed, and oil-cake, we should confer a benefit on the nation at large, and on our farmers in particular, if they could be persuaded to grow it.

If, however, our British and Irish farmers will not enter the field of competition with the Continental farmers who grow Flax and hemp, while our spinners and manufacturers

are obliged to pay such enormously high prices for the raw material, say from 12s. to 16s. for a stone of $16\frac{1}{4}$ lb. of Flax, which in 1858 was sold on an average at 7s. 3d. to 8s. 9d. per stone, I sincerely hope that your Lordship will seriously consider the importance of the growth of these plants in India, as, in addition to them, your Lordship is already aware I have proved that the wild rheea, pine-apple, plantain, and other fibres of India, can be so prepared by my patent machines and patent liquid, that they can be turned to a great account in this country, and that too, to the complete exclusion of the foreign Flax and hemp now so largely imported.

Being of opinion that I am correct in these observations, I venture freely, but most respectfully, to submit them to your Lordship's consideration, and more particularly to the attention of the Government of India; and I cannot but think and hope, that my endeavours to place before your Lordship and the Government, facts respecting the cultivation of such important and indispensable materials as Flax and hemp, which for many years have been, in consequence of our increased consumption and total neglect of the cultivation of the Flax plant, so great a source of profit to Continental farmers and dealers, that your Lordship will consider the subject deserving of your best attention. Trusting that however plain or imperfectly I may have expressed my views, in my several letters or remarks in this work, on the subject, your Lordship and those noble proprietors of the soil who are so deeply interested in agricultural matters, will consider that I am seriously advocating what I believe will, if fostered and promoted, draw millions from other countries into the British Exchequer, and thus become a national benefit,

I have the honour to be, my Lord,

With profound respect,

Your Lordship's obliged and faithful servant,

J. HILL DICKSON

P R E F A C E.

IF the author be asked, as the question will doubtless be put by many of his readers, his object in spending, from the year 1845 up to the present year 1864, so much time and labour in advocating the cultivation of Flax by British farmers, his answer must be, certainly, not the profit of publication, but as 198 copies must be forwarded to the Right Honourable Sir C. Wood, Secretary of State for India, for gratuitous distribution in that empire, with a view to promoting the cultivation and preparation of Flax and hemp and the many fibres which are to be found in the great empire of India; a profit under such circumstances has not been to him the thought of a moment, and as it is no more than a guide to the more important object he has in view, namely, the introduction of his patent portable machines for crimping or breaking, scutching, combing, scraping and brushing Flax, hemp, rheea fibre, pine-apple fibre, New Zealand Flax, &c., the work will be published at a price only barely sufficient to pay its own expenses.

The author has been twenty-nine years in connection with almost every department of the Flax trade, and for the last ten years in particular, engaged in inventing and manufacturing machinery for the preparation of Flax and hemp, and similar fibrous plants; and being made aware, from a personal acquaintance with the late lamented Dr. Forbes Royle, of the East India Company, that India abounds with fibrous plants, sufficient to produce, if looked up and prepared, more than double what we are obliged to import for our spinning factories; the author's sole attention has been directed to the supplying of such machines as must eventually

remove all obstacles to the cultivation of Flax and hemp in India, and more particularly to prepare other fibres which are, in his opinion, very far superior for many purposes to Flax or hemp. He has had them spun as wool, mixed in and scribbled with wool, and coloured with wool, and latterly spun upon cotton machinery, as if cotton, by the Messrs. Birley Brothers, of Preston, and also on silk and Flax-spinning machinery with great success; therefore, his object in publishing this work, is, to give cheap and wide-spread information on the value of the various plants of India, which he has by his inventions, made as fine and all but as valuable for many purposes as silk, and by such discoveries he feels he has added some links to the great chain of national wealth derived from our factories in Great Britain and Ireland.

Secondly, the author confidently asserts that the mainspring of his labours is the knowledge of the profits derivable from the growth of Flax, and a wish to see these profits enjoyed by his countrymen, instead of, as at present, by foreigners. English farmers do not know how profitable the continental growers find the Flax crop to be, and not only does ignorance on the subject prevail, but gross misrepresentations are still abroad; and as it is his earnest wish to see *both of them* finally removed, the work has been compiled by him as a contribution to the cause. He has endeavoured to show in its pages that the real interest of the landowner and farmer would be served by the extended cultivation of the Flax and hemp plants. The one will find himself benefitted by the higher cultivation which such crops require, and the other will find them to yield him greater returns than any of the grain crops he now grows.

The author knows from experience that, at the low prices of farm produce, agriculture is at present, in most hands, a very bare, if not a losing business; and he will be happy, if his endeavours to promote an extended cultivation of Flax and

hemp should prove successful, particularly in the south and west of Ireland, where millions of acres lie waste that might be turned to a national benefit, and increase thereby the demand for more permanent and profitable employment. For, under Flax cultivation, the remuneration of the labourer would never be less than two shillings per day.

For the ability to make the greater part of this collection of his writings, the author has to thank the Editors of *The Gardener's Chronicle and Agricultural Gazette*, *The Gardener's and Farmer's Journal*, *Morning Herald*, *Bell's Messenger*, *Leeds Intelligencer*, *Hereford Journal*, and several other English provincial papers; also the Editors of *The Armagh Guardian*, *Newry Telegraph*, *Banner of Ulster*, *Cork Constitution*, *Tuam Herald*, *Galway Vindicator*, and also the *Cork Southern Reporter*. The courtesy which he experienced from all these gentlemen, and the instant cordiality of those with whom he was best acquainted, merit his warmest acknowledgments, as their never-to-be-forgotten assistance has proved to him a tower of strength.

He has little more to add, than that he has completed the work to the best of his ability, and hopes the sincerity with which he writes everything (especially against the enemy of his cause), will procure him the usual indulgence for the many defects that remain, and if it should appear to the new reader a little beyond the pale of recognised style, or too exuberant in the flow of animal spirits, it is hoped he will be good enough to understand what former readers have long been aware of, namely, that the writer comes from the "Emerald Isle," and that what might have been considered affectation in colder blood, was only enthusiasm in a warmer temperament. He is not conscious, however, of suffering anything to remain which a reasonable critic could object to, and if political opinions in some parts triumph, he cannot but say that, had he attempted to alter the usual spirit of his writings

he would have belied the truth that is in him, and shown himself unworthy of the confidence of his friends, and ungrateful to his former supporters.

Neither time nor circumstances will allow him to abate a jot of those cheerful and hopeful opinions and wishes, in the diffusion of which he has now been occupied for the last fourteen years of a life passed in combined struggle and studiousness; and it is now his greatest consolation to find that the hours spent at his writing desk, and the days and nights of study while engaged in the invention of his machines, have not been spent in hopeless expectation of a reward, his successful inventions having enabled him to outlive misconception and the enmity of the selfish and narrow-minded sceptics of the day. He only waits for time, and he will yet behold his labours crowned with success, and his inventions acknowledged to be national advantages.

In addition to the aid the author has had the pleasure of acknowledging from the gentlemen of the press, he feels happy to say he has benefitted by reading and quoting from the writings of Leigh Hunt, who, it appears, like the author, lead a life of continuous struggle for years before he was able to enjoy tranquility and repose.

The author quite agrees with that gentleman when he says, "May all who experience cheerfulness equal to the writer in *adversity*, never know the troubles that have rendered it (until now) almost his only possession."

CONTENTS.

PART I.

	PAGE.
Instructions on the Cultivation of Flax, viz., description of soil best suited	1—4
Profits realised by growing fine quality	5—9
Chemical manure	10
Mode of preparing the Land	11—14
Deep Draining indispensable	15—16
Fallacy as to the exhausting effects of Flax on the soil, and rotation table in cropping	17—18
Directions in choice of seed, quantity to be sown per acre, and directions as to sowing	19—22
Weeding, harvesting or pulling the crop	23—24
Taking off the seed, drying and saving	25—26
Mixing of old with new seed—a fraud and injury to Flax-growers	27
Watering or retting in Ireland	28—30
Watering, Belgium system most to be recommended	31—32
Grassing, or spreading and lifting	33—34
Weeds in Flax, dodder most injurious	35
Flax-steep, or water in which Flax has been steeped or prepared, liquid manure, particularly for flowers	36—37
Flax seed for cattle-feeding in preference to oil-cake, proved by a most experienced and scientific gentleman farmer in Ireland, E. McKane, Esq.	38—44

PART II.

Instructions on crimping or breaking Flax or hemp straw, rhea or similar fibres, green or retted	45—46
Instructions on scraping, scutching, brushing and combing	46
Instructions on washing and wringing	47
Instructions on using the patent preserving liquid	48—50
The author's lecture in the Leeds Court House, on the fibres of India and his method of preparation, in August, 1858	51—57
Sir John Ogilvy's letter to the Right Hon. Lord Stanley, on the subject of a supply of Flax from India	58—60

PART III.

Mechanical process of heckling and spinning	61—65
Scale showing the cost of spinning the various numbers, from No. 22 to No. 180 lea	66—69
Tables of instructions showing the quantity of warp and weft, and expense of weaving a piece or web of drill, strong, or light linens, lawn or cambric handkerchiefs, cost of yarns	70—84

Profits made by cultivating Flax proved by letters published in the "Gardener's Chronicle and Agricultural Gazette," the "Leeds Intelligencer," "Bell's Messenger," and several other Journals, where growers had realized from £20 to £30 per acre over cost of production	85—97
Sir R. Kane's experiments proving before the Royal Irish Academy that the fibre is comprised of organic matters derived from water and the atmosphere, and not an exhausting, but absolutely a restorative crop, if properly cultivated and finished for market	98—100
Belfast Flax Society meeting at Ballinasloe and the several Flax-growers in support of the author, having condemned Mr. Stephens, the author of the "Book of the Farm," for his theoretical teaching respecting Flax as being an unprofitable crop	101—115
Mr. Stephens's letter in reply to the author's letter in the "Agricultural Gazette"	116—117
The author's reply to that letter	118—120
The author's letter to the "Leeds Intelligencer," showing where 1A. 3R. 16P. of land produced Flax sufficient to employ 217 persons twelve months and produced £2,217 6s. 8d. worth of goods for export	121—124
Dickson on his Flax mills being erected in workhouses,—Earl Clancarty's letter for information on the cost, and Dickson's reply now in 1864, with a view to Flax as a substitute for cotton	125—128
The late Mr. James Brown's remarks on the good that would result if the linen trade was extended to the south and west of Ireland, and workhouses abolished and turned into Flax-mills. The most noble the Marquis of Downshire's reply	129—131
The author's letter on the regeneration of Ireland, proving what Mr. T. H. Sotheron Estcourt, M.P., did on his farm in Wilts, by having one of his Flax-breaking and scutching mills put to work where yarn or linen had not been made, that the same could be done in Ireland	132—144
The author's letter in answer to Professor Lowe's letter in the "Cork Constitution," giving the practical result of Flax-growing on the estate of Sir T. Bateson, by a gentleman farmer, Mr. Hugh Dobbin, near Moira, and several other growers, all of which proved the Professor's theoretical views were erroneous	145—158
The late Right Hon. Sir J. Graham's speech on Flax-growing, and his notice of Mr. Samuel Druce, of Esham, Oxon, profits on 5A. 2R. 6P.	158—160
The author's answer to the Editor of the London "Standard," against the increase of Flax-culture and the linen trade in	

Ireland, proving his inconsistency with his writings in 1850, in favour of and quoting Swift's policy on the thriving of a kingdom, and proving, by Mr. Druce's profit on Flax-growing, that the Editor is not competent to give advice on the subject	161—165
Returns of Flax grown in 1863 and 1864, by Mr. W. Donnelly, Registrar-General, Dublin, and further remarks on the warning voice of the "Standard," and the truly absurd views and ignorance of the linen and Flax trade of Ireland, as Sir R. Kane's experiments upset his theoretical assertions	166—171
The author's first success in spinning rheea fibre, Flax, and hemp, on cotton machinery, in Preston, and the expressed opinion of the late Sir Wm. Brown, Bart., of Liverpool, in its favour, and that such must go far to revolutionise the trade of Lancashire	172—173
Letter from Messrs. Birley, Brothers, of Preston, to the author, after the rheea spun by itself, with yarns spun from rheea fibre and Surat cotton mixed	174
Observations on the above yarns when woven into cloth, and sent on to Sir C. Wood and Mr. Gladstone, recommending it in place of cotton cloth for the army in India, as it could be made for half the price of cotton cloth	175—176
Letter from the author in answer to the Editor of the "Mark Lane Express," on his patents for converting green Flax-straw into fine white fibre in five hours	177—181
Letter from the late Dr. J. F. Royle, of the Hon. East India Company, from whom the author had the first samples of rheea and other East Indian fibres	183
Observations on the necessity of absentee landowners in Ireland having Flax-cultivation extended in the south and west, to prevent workhouses being again, like Tralee, crammed with 7,300 human beings doomed to misery from want of employment	184—186
Letter to the late Marquis of Lansdowne, and reply from his London agent	187—188
Observations by the "Armagh Guardian" on the prepared fibre. Letter to "Bell's Messenger" on the result of preparing green Flax-straw for Mr. Dand, the tenant of Lord Lovaine, in Northumberland	189—190
Letter to the "Cork Constitution" on the result of the Governor of the prison having employed the prisoners to prepare green Flax-straw	191—192
Observations of the "Londonderry Standard" on my fibres	192—193
The Editor of the "Morning Herald's," notice of my first patented Flax preparing machine	194

Result of preparing a portion of two bales of Flax and hemp sent from Brittany by merchants in Paris, to be prepared in the presence of the French Government Engineer, J. B. Paslocerau, Lalasse, and others	195
Letter of complaint and loss of cases of fibre, by the Armagh Railway Manager; neglect of duty	196—200
Calculation of expense and profit of growing and selling green un-steeped Flax, by the author's patent machinery for preparing	201
Calculations, if followed up by steeping in his patent liquid, and remarks on the imports	202—204
Letter to "Bell's Messenger" on the subject of a market for green Flax-straw, and the value when prepared	205—209
London Flax-brokers and Newcastle-upon-Tyne Flax-spinners, value on the green Flax prepared by the patent machines	210
Visit of London Flax merchants and the Right Hon. Lord Lovaine, Mr. T. P. Oakes, and Col. Alcock, to see the machines at work, and report of Mr. Lee, Editor of "Bell's Messenger," also present	211—212
Messrs. Marshall's report on the quantity they can produce by a given weight of Flax-straw; also Mr. Andrews, Mr. Warn, Mr. McAdam, and the author	214—215
Report of experiments on all kinds of Flax, including phormium tenax, valued, when prepared by Dickson's patent machinery, alone, at £40 to £50 per ton, by J. R. W. Atkinson, Esq., retired partner of Hives & Atkinson, Leeds	216—218
Letter to the "Banner of Ulster," in 1856, on the importance and advantage of power-loom weaving, stating the fact that I was the first man to introduce a power-loom into Belfast, which I superintended the alterations and working in Leeds required, and brought back with me to Belfast the first two perfect webs of linen and linen drill	220—226
Calculation of weaving linen by hand, and weaving by power, by my system, and by the common system now followed	227—230
Report on Irish scutching-mills in the four provinces, Ulster, Munster, Leinster, and Connaught	231—232
Report of Mr. Crisp, Editor of the "Agricultural Magazine," on the working of the machines on Russian hemp and Flax, Indian fibres and Italian hemp	233—234
Italian Hemp and Flax Company in Italy and the cause of failure, being the want of my improved machines in consequence of Curte Piccottto's failure	237—238
The "Cork Reporter" on the Flax subject, and Dickson's Indian fibres, and their state of perfection when exhibited at their office, by Mr. Biggs, of Cork	239—241

C. H. Frewen, Esq., the owner of Innishannan—cause of his not carrying out his proposal to aid the author in erecting mills on his property in the village	242—246
The “Cork Reporter” again comes out on Flax in India, knowing the want of material for the trade in Ireland, and that want of cotton in England, is Ireland’s opportunity for Flax . . .	244—246
The author’s observations and writings in 1845, on the certainty of Flax taking the place of cotton in Manchester, made still more confident in 1847 by the visit of a relative from Charleston, Dr. Corbett, nephew of Dr. S. H. Dickson	246—247
The author’s observations on the opportunity his Excellency Lord Wodehouse, now has of making Ireland the right arm of Lancashire, and doing away with the slave-grown cotton of America . . .	248—249

PART IV.

Early history of the spinning and weaving of Flax into linen cloth up to the reign of William III. when Ireland was left in possession of the linen trade,—progress and falling of or decline in the amount of production which commenced from 1815 at the conclusion of the war	250—259
Messrs. James Kay and Sons, of Manchester, the first to revive it by the introduction of wet spun yarns by their patented inventions, when others from Yorkshire followed by giving long credit to manufacturers of linen cloth	260
Messrs. T. and A. Mulholland may be justly called the fathers of the trade, inasmuch as they were the first to build an extensive factory for spinning Flax (or what is justly termed Kaye’s patent) in Belfast in 1828, in most extensive premises, aided and extended by their partners, Hind, Herdman, and Co. . . .	261—263
Textile fabrics of the ancients, taken from the London “Daily News,” worthy of space and perusal.	264—269
Letter taken from the “Morning Chronicle” on cotton and Flax, with notes on cottonizing Flax by the author’s machine, now that cotton is from 1s. 6d. to 2s. 6d. per lb. in 1864	270—272
The author’s experiments on New Zealand Flax (Phormium Tenax) for the Society of Arts explained, and an extract from Mr. C. Hawthorn’s “New Zealand,” on the climate and scenery of the colony—the Maori or native islander noticed	273—277
Comments (by the author) on the sketch of the “History of Flax-spinning in Leeds,” read by a Leeds Flax-spinner before the British Association in 1858	278—290
The author, seeing Dundee was by the Leeds Flax-spinner unnoticed, gives the statistics of Dundee, and proves that the prosperity arises from Flax-spinning and weaving, and exports of yarns and cloth	291—294

Rheea recommended to take the place of cotton in Lancashire, just as jute took the place to a great extent of Flax in Dundee, and cloth made from rheea and cotton for trowsers stuff for the Indian army at half the cost—not worthy of Mr. Gladstone's notice—"Buy in the cheapest and sell in the dearest market," forgotten by the finance minister	295—296
The prosperity of Dundee recommended to Galway merchants and farmers, and the labour of a girl of sixteen years of age in Ulster making £20 per annum weaving linen, held up as an example	297
The sweets of industry by pursuing Swift's policy recommended by the author, and the press that fosters jealousy between England and Ireland condemned, because they do not join or hold up the advice of Sir R. Kane, on cotton imported and manufactured in Killaloe to work a social revolution	298—300
A short sketch by a Belfast gentleman on "Our Staple Manufacture, Past and Present," is well deserving of space and perusal	301—307
The author's ideas of the pleasure to work with others that have perseverance, genius, and enterprise to advance arts and manufactures, in the face of the enemies of progress, over-reaching Jews	308—311

PART V.

The late Dr. J. F. Royle's work on the "Fibre Plants of India," their cost of preparing, and produce or profit when sold in Liverpool, and bank-note paper made from the waste.	312—316
The new and improved machines will have been so constructed that all has been brought into one machine, to break out all the woody parts of the plant. The whole process explained	317
The first yarns and cloth made from the patent process from Indian fibres exhibited at the Society of Arts May 9th, 1860, by Mr. Dickson, Thomas Bazley, Esq., M.P., in the chair, during the lecture of Dr. Watson, India Office.	318
The author's and patentee's estimate of the cost of machinery, cost of material, cost of working and profit per week, on rheea fibres, Flax, hemp, or New Zealand Flax, suitable for cotton, silk, worsted or Flax-spinner's purposes	319—322
Quantity produced in thirty minutes in the presence of Mr. Gardener, of the firm of Messrs. Gardener and Mackintosh, Engineers, New Cross, London	323
Yarns spun by Yorkshire and Lancashire spinners of Flax, silk, worsted and cotton, in all fifteen firms, names and addresses	324—325
The noble Earl of Derby's letter on the subject of having the patentee's book containing the material, yarn and cloth, placed before the Executive Relief Committee in Manchester	326

The patentee's system, by order of the Lords of the Admiralty, tried on his prepared Italian hemp at Chatham, proved 20 to 25 per cent. in his favour, but not reported, and a complaint made of the injustice	327—330
Letter by the Rev. George Rowe, Geography Training College, York, who had the Indian fibres, yarns and cloth for the purpose of illustrating his lecture and supply of material . . .	331—333
Letters of Sir W. Hooker, Royal Gardens, Kew, who had obliged the patentee with the Indian fibre plants in the green state from the Gardens; also the author's views on the necessity of the Secretary of State for India promoting the cultivation of such fibres as substitutes for cotton	334—336
Mr. N. Wilson on the useful vegetable products, especially the fibres of Jamaica	337—343
Notice to spinners and manufacturers to prevent piracy and fraud . . .	344—346
New company for the supply of East and West India fibre, and their attempt to make use of the patent machines and liquid in India, without paying according to their agreement . . .	337—348
Lient-Colonel Abbott's report on the cost of growing rheea fibre in India, from 26 years' residence in that empire and a thorough knowledge of the nature of the plant	349—358
Mr. W. Whittaker, late partner of Messrs. Milligan and Forbes, of Bradford, his purchase of the patents for £10,000 and the cause of his not making good his agreement after paying £850 on account	359—360
The late Dr. Royle's letter to the patentee, wishing to see the machines at work	361—362
Leeds spinners valuation of Italian hemp and New Zealand Flax, (Phormium Tenax), when prepared by the patent liquid . . .	363—364
New material for cotton spinners, not half the price of cotton, calculated to revolutionise the trade of Lancashire; such was the expressed opinion of the late Sir W. Brown, Bart., Liverpool, and liberty to refer to him	365—372
Banquet to the Lord Lieutenant (Lord Wodehouse) in Ireland, 26th November, 1864	373—376
Letter of the patentee to His Excellency on the advantages of the power-loom in Ireland, the patentee having been the first man in Ireland to introduce a power-loom into Belfast to weave linen cloth through his alterations on a power-loom in Leeds, in 1838	377—378
His Excellency's reply and the patentee's comments	380
APPENDIX	1—30

PART I.

Instructions on the Cultivation of Flax, commencing with description of Soil best suited to produce it—Profits realized by growing fine quality—Chemical Manure for its growth on land not considered in proper condition, *prepared by scientific men*—Mode of preparing all kinds of soil for Flax culture—Deep Draining proved *Indispensable*—Rotation of Cropping so as to have Flax only *once in ten years* in the same soil—Seed directions as to choice—Sowing directions as to time—Necessity of Weeding explained—Harvesting or Pulling the Crop fully entered into, and directions on the most improved method of taking off the Seed by Dickson's Patent Machine, and mode of saving it—Watering, commonly called Retting, on the best system practised in Ireland—The Belgium system of Steeping in a running stream **PREFERABLE**—GRASSING, SPREADING and LIFTING—Water in which Flax has been steeped as Manure, especially for FLOWERS,—Flax Seed for feeding cattle practised and recommended by E. McKane, Esq., Ballyhardan, and Blackwater, Armagh, Ireland, from the year 1830, on his extensive Farms.

IN RECOMMENDING the more extended cultivation of Flax now in 1864, (when I find there is an increase of 87,843 acres grown in Ireland this year over that of 1863) to the consideration and attention of the Landowners and the Farmers of Great Britain and Ireland, as being more profitable to grow than any other article that they can produce from tilling the soil, aided as our natural productions are, by the climate of the country, my first duty will be to direct attention to the description of soil that is requisite for the growth of the Plant, so that Farmers may know how to select or prepare their land, that they may calculate with certainty on producing Flax of *fine* and valuable quality, such as the Belfast Flax Society asserts has been produced, and sold at

the high price of £90 to £150 per ton,—a large amount when we consider the same may be produced off three statute acres of land, and £10 per acre is sufficient to cover rent and all other expenses in preparing the Flax fibre for the market, and as this great inducement of profit should stimulate Farmers to select and prepare ground for Flax, with as much care and attention as they would do a garden plot of Onions,—I shall endeavour to inform them of what I know of the soils in the best Flax districts in Ulster, as well as of what I know of the soils and the mode of preparing in the Flax districts on the Continent, and the separate modes of management in harvesting the crop, and to this I shall add a description of the compound, or manure requisite to bring the Land, *if poor*, up to a proper state to produce a luxurious crop of Flax, describing the mode of preparation, and the course of rotation.

DESCRIPTION OF SOILS.

It has now been proved beyond all doubt that good Flax may be grown by careful cultivation on various descriptions of soils, whether the upper or active soil be LONG, PEATY, CLAYEY, SANDY, or GRAVELLY, *provided* there is beneath a good clay subsoil,—but that loam of a deep, dry quality, with a clay subsoil, is the best for producing a *large quantity*, or yield, and *fine quality of fibre*, we have every proof of the fact from experiments made by successful growers in the counties of Armagh and Down, where Flax is now often grown equal to the best *Flemish Flax*,—because of the care and attention the Farmers in these counties give to Flax growing in order to compete with foreigners, and not have it said they can be beat in practical operations by the Belgians. Being myself deeply interested in the improvement of the quality of Flax grown in Ireland, during the many years that I attended the Armagh, Tanderagee, Ballybay, Dungannon, and Ballymena

Flax Markets, every week during the Flax selling season, to purchase the article for the Flax Spinning firms (for which I was agent) in Leeds and Preston, when very little Flax could be had in the Irish markets as well prepared as that which is now produced,—I took particular notice of the soils, and made great enquiries of the Farmers, as I drove from market to market, respecting the course or *rotation*, *preparation* and management, I found that in the Markethill and Tanderagee district, where the soil is rather of a sandy and gravelly mould, Flax of very fine quality was constantly produced in this quarter. They planted the Potatoes at that period, principally in the ridge way, with the spade, and this deepened the soil as they frequently raised up by a “*Pick Axe*” the clay soil in the furs to cover the plants, and Potatoes thus planted are always *better manured* and more easily kept free from weeds than they are in the Plantations or drill method of Labouring, and the ground is well pulverized by the digging, especially if the bottom of the furrows or subsoil happens to be, as it is in most parts, clay, it is frequently, as I said, hand picked and the furrows shovelled up, and this clay being tossed on the top of the ridges to the scorching rays of the Sun, crumbles down round the Potatoe plants, and helps to bind the loose mould into a more firm body,—and when the Potatoes are removed by the spade, it gets such a mixing with the mould, that it is to the land as a new flannel vest is to the body at Christmas, for it binds and renovates it, and prepares it to stand the labour, just as the warm flannel prepares the body to stand the piercing blast of the winter’s day. Formerly, and I may say up to 1842, when the Belgian system got known in Ireland, the ground so prepared for Potatoes, was what the Farmers grew their Flax crops from; but now they grow it after the Belgian system and take first a crop of Barley or Wheat after Potatoes, and then Flax, and this they find much more profitable, for in the

first place, the Barley or Wheat are good paying crops, and after that, they find the stubble when ploughed down and managed in autumn, as I shall afterwards remark, produces them Flax of much finer quality than what they formerly grew on Potatoe ground.

Although Flax requires *rich and deep soil*, experience has taught the Flax growers in Ulster, that it is not on the large quantity of the common fresh Farm-yard manure being used, that they must depend when they calculate on having a luxuriant crop and fine quality of Flax, as chemical investigations have shown, that the fibre of Flax abstracts certain matter from the soil more largely than other cultivated crops; and if the common fresh Farm-yard manure does not possess these ingredients, because of the poor feeding of the cattle or otherwise, an over quantity of manure of this sort will unquestionably be detrimental to the crop, inasmuch as it will force up strong, *coarse* bone of Flax Straw, and as a consequence *coarse fibre* must be the result. I therefore assert from the experiments I have seen made, and the result I have watched of Flax *after Potatoes*, and Flax *after Barley* or Wheat, that the latter crops should be produced after the ground has been manured for Potatoes or Turnips before Flax be cultivated,—as either crops will take up the over quantum of matter which would, if left in the soil, completely spoil all hope of the Flax plant being produced either in quantity or fine quality. The Wheat or Barley stubble when turned down by the plough in October serves as manure for the Flax the year following.

PROFITS REALISED BY GROWING FINE FLAX.

Having so strongly recommended the extension of Flax cultivation to the notice of the British Farmers, they are likely to ask What are we to expect from adding a new article of produce into our present course of rotation in Farming? and how does it appear that Flax can be made to leave so large a profit over *Wheat*, *Barley*, or any other crop after paying

expenses? I shall therefore enter into the subject by calling attention to the expenses of growing one acre of Flax; and although I give on the credit side, sufficient to show £20 clear profit per acre, I think the *letters* and *references* that will be found in another part, will be sufficient to prove beyond all question, that a much greater profit can be had by care and good management; and depending on them as proofs, I shall proceed to show the advantage to be gained by the Farmers in the cultivation of this plant; and will, for their information, give particulars as to the profits on *one acre of land* cultivated and prepared with Flax; then let those Farmers who have calculated the expense and profit on one acre of Wheat and Barley, compare with this, and answer the question—Whether or not it is advisable for them to grow Flax, as they do in the north of Ireland, to meet their rents, which cannot be affected by the rise or fall of grain? Observing in a table I have which shows the annual value of land per statute acre in England and Wales, in which I find—Leicester, £1 6s. 9d.; Somerset, £1 5s. 10d.; and Worcester, £1 6s. 2d.; these three being the highest average, I select one of them:—

FLAX.

Dr.	£	s.	d.		Cr.
Rent of 1 Acre of Land	1	6	9	By produce of One Acre of Middle Quality of Flax, say 52 Stone at 8s. 6d.	22 2 0
2½ Bushels of Flax Seed.....	1	10	3	20 Bushels of Flax Seed at 8s.	8 0 0
Ploughing and Sowing	0	15	0		
Twelve Hands employed Weeding	0	12	0		£30 2 0
Twelve do. Pulling	0	18	0	Deduct Rent and Expenses.....	9 12 0
Six do. Watering and Grassing ...	0	10	0		
8 do. Lifting and Carting Home...	0	8	0		
Scutching, say 52 Stone	2	12	0		
Poor Rates and Taxes	1	0	0		
	£9	12	0	Nett Profit...	£20 8 0

I have given the outside expense of the cultivation of one acre of Flax crop, and the average weight of a middling crop and quality; at the same time I must observe, if our Irish and English Farmers could be trained into the management of the crop as the Belgians do, there is nothing to prevent their obtaining in lieu of 8s. 6d., 12s. to 15s., or perhaps 20s. per stone of 14lbs.—as spinners often give from £100 to £180 per ton for COURTRAY FLAX, and I have frequently given 12s. to 15s. per stone for fine quality of Irish Flax, when selecting as Agent for Leeds and Preston spinners in the Flax markets of Armagh, Tanderagee, Bellymena, and Belfast, however, as the example *as to produce and profits* that I quote, may be said to be *theory* and not *practice*, I must now bring in proof.

Leaving the profits to be proved by the letters from English and Irish Farmers that will follow this, I must bring in the production on the property of the highest and most distinguished supporters of Agricultural productions in England, as to the weight of Flax and seed off $4\frac{1}{2}$ statute acres; but I shall first offer a few remarks on the great difference between Flax and every other crop grown in this country, the comparative value depending as it does, on the manner in which it is handled after the crop has been harvested.

I am aware that, in some instances, Farmers have (on choice pieces of land) grown from 6 to 8 quarters of Wheat to the acre, and that such a crop would, no doubt, pay well for the care and labour bestowed; but according to Mr. BARCLAY's report of experiments in Surrey, which report I have copied in this part of my compilation, I find that 40 bushels per imperial acre are all he can produce. However, let an average of Wheat be taken at five quarters per acre, or say £12 in value, therefore, as you only can differ in producing EXTRA QUANTITY, say what might be worth £2 more than your neighbour could realize, and cannot produce

quality that will draw more than 6d. per cwt. over him, your account under the most prosperous circumstances, for one acre of Wheat, could not be above £14 0 0

Then deduct Rent, and expenses 5 10 0

Thus it appears the profits on one acre is £8 10 0

In respect to the Flax crop, however, you may exceed that of your neighbours, not only by *extra quantity* due to good cultivation, but you may also exceed him by producing *superior* quality by better handling after harvesting or pulling; thus taking a middling crop of Flax, say 52 stone at 8s. 6d. per stone—£22 2s.; the seed being nearly sufficient to cover the Rent and Labour expenses, this sum will be, not only *all the profit* that can be made, but as I have said previously, it is possible to make it much more than £22 2s. You may grow it worth 10s. up to 20s. per stone, whereas, it is not possible for you to grow Wheat worth more than 5s. per bushel, or 6d. per bushel over your neighbour; for extra care at the harvest can make no change on Wheat, nor can you by any means improve the quality, as you do in the Flax preparation. By these facts I prove that Farmers have a premium offered them by cultivating Flax, that *is not to be had* from the cultivation of *any* of the natural crops of Great Britain and Ireland.

Having selected the production of Flax and seed off $4\frac{1}{2}$ statute acres, to prove my *theory* being *practical*, as to the weight of one acre's produce, I must call the reader's attention to the following:—

HIS ROYAL HIGHNESS, the late and much lamented PRINCE CONSORT, favored me with the privilege of placing his name at the top of my list of subscribers as patron to my first Work on the Improved system of Flax cultivation in 1847, and as the $4\frac{1}{2}$ acres alluded to were grown on His Royal Highness's model farm, where his oxen and pigs, for which he had

obtained so many prizes at the Agricultural shows, were reared, it is but justice to the late Prince to publish the successful experiment made by his direction in cultivating Flax, an experiment which, I should say has been, if not equal, little short of what any of His Royal Highness's relatives could produce in Belgium, where our best Flax comes from.

The report now before me does not mention anything respecting quality, but by it I am informed that the produce or yield off $4\frac{1}{2}$ acres has been 252 stones of clean Flax, fit for spinning, and $76\frac{1}{2}$ bushels of seed, or at the rate of 56 stones of Flax per acre, and $17\frac{1}{2}$ bushels of seed per acre,—this is certainly more than a common average crop, and tells much in favour of the skill and superior management of His Royal Highness's steward.

As this very successful result arose no doubt, in a great measure, from the steward selecting richly cultivated soil, on the property of the *most honoured when living, and most lamented Prince after death, that ever possessed one acre of land in England*, it would be *bad taste, ungrateful*, if not disloyal, on my part, towards our most beloved Queen, the virtuous wife and much loved children of such a truly good man, as the late Prince Consort, if I made use of His Royal Highness's name in this successful experiment, (an experiment, an example that the noble owners of property should all follow) without a further effort to do justice to the memory of a Prince *so virtuous* and so famed for acts of benevolence, a proof of which we can see daily in his cheap model lodging houses for the poor, whose *wants and comforts* he *studied*, all of which stand as a monument now that after generations may *love his children* for *his sake*. The much lamented Prince Consort patronised everything that he, from a highly gifted mind on almost every subject, believed to be calculated to do good, and must long be held up as an example as a HUSBAND, a FATHER and a *friend*

to the poor. I, like many others who live *under* and never *begrudged* to pay the taxes required to keep up the dignity of a monarchy, expecting and delighting to see and believe, that the crown is worn by a *virtuous ruler* and never polluted, annoyed, or disappointed by *marriage*,—watched the movements of the lamented Prince from the day of his marriage to our good and virtuous Queen with great delight and satisfaction up to the day when it pleased God to call him to another home more glorious and everlasting, and I can say, without flattery in recording in this book my humble opinion of the character of the late and truly good Prince Consort, “that his like we ne’er shall look upon again,” and I do sincerely pray, that his son, His Royal Highness the Prince of Wales, may walk uprightly in his lamented fathers footsteps, in order that he may be equally loved as his father was, by the *humblest* as well as the most exalted of Her Majesty’s subjects.

I shall add on produce a paragraph from an Irish Newspaper, as evidence in favour of what I say *may* be done by extra attention, in the cultivation and preparation of Flax :—

“EXTRAORDINARY PRODUCE.—Mr. J. Corry of Mullan-bury in the neighbourhood of Dromore, sowed last “season (1857) 15 pecks of Riga Flax seed on ONE “ACRE and half a rood of his farm, the produce “when scutched at the Fintona Flax Mills amounted to “120 stones payable, for this he received 9s. per stone “in the Omagh market of Saturday, thus realizing a sum “of £54.” This is answer sufficient to upset the remarks of the editor of the “Standard” newspaper, who asserts that there was a decrease of Flax in Ireland from 1851 to 1858 because it was not found to pay.

To these experiments I shall add several accounts of other Farmers in the counties of Down, Armagh, and Antrim, the leading Flax districts in Ireland, and also some English experiments.

CHEMICAL MANURE FOR FLAX.

If Farmers wish to grow Flax on ground that they consider not sufficiently prepared by manure to produce an average or middling crop, the following compound, which has been proposed by chemists who have analyzed the plant, as a manure has been recommended. After the land has been ploughed, and well harrowed, the compound should be sown broad cast on the land before sowing the seed :—

Bone Dust	54 lb.	cost about	£0	3	4
Sulphate of Magnesia . . .	56 lb.	„	0	4	0
Murate of Potash	30 lb.	„	0	2	8
Common Salt	30 lb.	„	0	0	4
Burned Gypsum	30 lb.	„	0	0	6
			£0	10	10

The above quantity is sufficient for a statute acre, and as the expense is not great, experiment alone is the only way whereby Farmers can know the exact quantity that may be requisite for their soil; as much depends on the nature as well as the condition of the land, and no teaching but that of practical experience can guide operations so as to be confident of success.

MODE OF PREPARING THE LAND.

During my visits to the continent I observed in the Flax districts, especially in France and Belgium, that the Farmers took more pains in preparing their ground for Flax, than they did for any other crop they grew, by deeply trenching it before the winter sets in, having ploughed down the stubble of the previous crop, which is always Barley, Wheat, or Oats, after being well manured; to grow potatoes or turnips they

clean up the furrows, and throw all the clay or mould roughly on the top of the ridges so that it may have the benefit of the frost through the winter, and the furrows being so cleaned the rain and snow as it melts gets away, and the land is always easily dried and in a labourable state; if the weather permits they plough it deeply down early in February, and early in April they give it another deep ploughing,—and before they commence sowing they are prepared if they consider the land not rich enough, with a compost, which they collect purposely for their Flax crop through the winter, from shamble's privies, etc., etc., to which they add a quantity of Rape cake, and after giving the ground a light stroke of the harrow, they give the soil a light covering of this compost, leaving it, if damp, to dry but only sufficient to harrow; they then give it a *smart stroke* of the harrow, and then it is in a fit state for the seed. Many use liquid manure as a quick fertiliser, which they gather purposely for Flax culture, and the quantity of both that are used they regulate from their knowledge of the condition of the land. The Farms being small, spade labour is the most common mode of preparing land for cultivation, and as by the careful and exact method they have of the alteration of the furrows every season, they manage to have the whole field deeply dug over, in about *four seasons*. They have soil so deeply prepared, that it is more like our Garden Plots than common *field* ground. Some of the best Flax ground in Holland is that which has been reclaimed, and which consist mostly of sandy loam, shells, etc., etc.; but here again the spade labour tells in opposition to the plough, as no people are better or I believe so well paid for their labour as the Dutch Farmers, and the spade is the principal Agricultural implement they use.

Having explained the continental mode of preparing the soil for Flax, and the necessity of deep ploughing and deep trenching, which is decidedly the best labour for *any crop* I

shall here introduce an occurrence that may be deserving of the serious consideration of *unskilled* Flax growers. I recollect being honoured with a visit at my counting-house 29, Broad Street Buildings, London, in February, 1845, from Sir EDWARD BAKER and several other gentleman, in all 6 or 7 from Norfolk, who had early been induced by a Farmer, Mr. WARRENS, (who had grown a little Flax in 1843) to grow some Flax in 1844, on various sorts of soil, and each of them had their samples with them for my inspection, their instructor (Mr. Warrens) being in total ignorance of the value for difference in the quality of the article they had produced,—as he admitted the fact before the gentlemen alluded to, and that he had advised the sale of it to Net makers at 5s. to 6s. per stone. I found on careful examination that it was worth *much more*, as some was good value for 7s., some 8s., some 9s., and one lot well worth 10s. per stone, as it had every quality of the *Courtray Flax*, and also the *rich gold colour* by which Courtray is known. On questioning the gentleman that grew it, I found he had grown it on part of a field in which he had sown Oats, but seeing that the Oats had missed, he ploughed up a part and sowed it with the Flax seed, from which this fine specimen was produced. Although the other part of the field in which he allowed the Oat crop to remain was so *worthless*, that he turned his sheep to graze on it through the summer, and yet he had so luxuriant a crop of Flax, that the Norfolk Farmers that saw it *felt astonished*. Now the cause of this should not be lost sight of, as it is an evidence of the fact, that Flax does not rob the soil of those materials that are requisite for nourishing Wheat, Barley, or Oat crops—as it appears to have grown luxuriantly *where Oats could not be produced*. Again, it proves the necessity of deep trenching and subsoil ploughing in preparing land for the cultivation of Flax, and next to that, the necessity for a proper system being followed, as to the course of rotation in cropping. The land

alluded to had been worn out and exhausted under the ordinary management of growing *surface rooted* plants, such as Wheat, Barley, Oats and Potatoes, as they receive the principal part of their food out of the surface soil, and as the rain had year after year washed down the richest portions of the manure from the upper surface, or active soil, until it became lodged in the subsoil, it lay there unused till the Flax, which has been known to grow 10 inches in 12 days from the time of sowing, reached it,—and as Flax, like Beans, Peas, Carrots and other deep-rooted plants, will grow on land that has been exhausted from producing surface-rooted plants, it is quite clear from this fact, that the Norfolk gentleman's land must either have had on the surface soil, matter sufficient to nourish the Flax he grew, or the subsoil must have had the benefit of the manures that escaped downward from the reach of the surface-rooted plants, for the Flax found its support in abundance, in some of *the two*, if not *in both*, hence, arises the necessity of spade labour, or subsoil ploughing, in preparing Flax as well as the necessity for a system of rotation, so that surface-rooted plants be always followed by the growth of deep-rooted plants; and the practice of taking two grain crops off the land without a green crop being produced between them, be *totally discontinued*, as such a system will ever produce deficient crops,—and the land, if not thrown down in grass for years to rest, will become exhausted and overrun with *scutch*, *daynettle*, *docks*, and all kinds of pernicious, annual weeds. Farmers should also know that the roots of some plants will grow from three quarters to one inch daily, and that frequently the roots will grow deeper in the soil in one day than the top will grow in five or six, and that as Flax ranks in this class, it is requisite to call their attention to the necessity there is for their devoting their energies towards having their ground properly prepared, so that the roots may push onward without obstruction; and as experience tells us

it will not grow on fresh farm-yard manure, let those who have *poor soil*, and have not liquid manure to bring it up to a state fit to grow Flax, if they wish to grow it off-hand, plough their land in autumn as before advised, and early in February give it a stroke of the harrow and cover with old rotten manure as if for ridge Potatoes, and again plough level, say, to six inches deep, turning down all the manure; then, in April, a good harrowing before sowing the seed will be sufficient. This being done two months before the seed is sown, the rain, combined with the moisture in the soil, will bring the manure into a liquid state, so that when the roots of the Flax plants overtake it they will be revived and so moistened and prepared by it that they will have strength and vigour to enter the subsoil, whence they are certain, if it be clay, to abstract food sufficient to produce a luxuriant crop.

Great improvement has been made in the mode of cultivating Flax, by the introduction of the Belgium system, since I grew it on *three* Farms in my occupation; ONE, two miles on the *Rich-hill Road*; another, in Ballynahone, half a mile from the city of Armagh; and THE THIRD, two miles from it, in the Town land of Ballymorán, on which I had works for preparing Flax by breaking and scutching it. I shall describe the mode employed by a neighbouring Farmer, who grew every year, the best Flax *for quality or quantity*, I ever saw scutched in my Mills. As he generally got from 10s. to 12s. per stone for his Flax, and his Farm being next to mine, I watched his mode of cultivation with great care and interest.

He selects for his Wheat or Barley a field in which he has grown Potatoes, and after growing one or other of these crops, in October he ploughs down the stubble very deep, and as his land is rather of a light sort of mould he spade-trenches the furrows *very deeply*, and throws up the clay subsoil on the top of the ridge, in as rough a form as possible, to allow the

frost and air to act on it during winter; he shovels up the furrows clean, so that free vent for top water may be had. It remains in this state till March, when he makes another deep ploughing to prepare it for the sowing in April, and as his ground has been for years under spade cultivation, by annually planting one field of Potatoes on the ridge method, he has the surface earth well cleaned and a good deal of the subsoil worked up amongst it, so that it is, although *naturally shallow*, now *deep soil*. He ploughs it in March, when the harrows are put on, previous to commencing to sow his Flax seed, *all flat*, without ridges, and he incurs considerable expense in cleaning the ground from *weeds* and *roots*, which having cleaned, he gives it a turn of the roller to insure the seed an even bed—and as it is of a light, loamy soil, he finds a *thorough* rolling requisite, for it consolidates the earth and insures him a *better* crop, a *more even*, and a finer *quality* of Flax than when he omitted what he esteems to be the most important part of his labour in cultivating Flax.

DEEP DRAINING INDISPENSABLE.

As thorough draining is now admitted to be of the greatest importance in the cultivation of all kinds of crops, it would be superfluous of me, after the celebrated Mr. MECHI's practice, to dwell upon the fact, and I need but remark how requisite it is in the cultivation of Flax, to have this part of the preparation of the soil attended to, for if the land be neither drained nor subsoiled, so as to take off the under water, as soon as the roots of the Flax plant reach the *cold till*, or *water*, it immediately stops its growth, (just as a worm will turn that is trodden on) and it becomes so much injured that in a few days it causes the stem or straw of the plant above ground to become yellow, and that frequently when the plants are not more than from twelve to fifteen inches long, therefore the

crop in such cases must become a *failure*. He who grows Flax, if his object be *profit*, must decide on sparing neither labour nor expense in preparing the ground in the way I have described, if he would be ranked among those who produce *large quantity* and *fine quality*; for if the soil be left free, and clean of weeds, and be well pulverized, *dry* and *open*, so that the roots may penetrate downwards in search of food, as it is known that they do, often to the extent of three-fourths of the length of the straw or stem of the plant above ground; he is certain to have such Flax, both as to length and quality, as will be prized by spinners, for spinners prefer Flax long, that they may cut or break it by their machinery into *three lengths*; the fine yarns being obtained from the middle, and the coarser numbers from the ends. Farmers should never be satisfied with their labour until they can produce Flax fully three feet in length, as that is the sort which will command the market, and, as a consequence, realize a *good profit* on their labour; but if, on the contrary, they neglect the draining of the land the cleaning of the soil, and other requisite courses of preparation, and in the work of Flax culture follow the example of the careless sower who may be seen to scatter a sack of seed oats on the land, after scratching it over in a most slovenly manner, leaving all to be done by the great provider, a bountiful Providence, whilst they fail to act the part of faithful stewards, they are, by such a course of mismanagement, certain to come out of the *attempt* to cultivate Flax,—*minus* profit.

FALLACY, AS TO THE EXHAUSTING EFFECTS OF FLAX ON THE SOIL.

On this part of the subject the careful analysis of the plant by professional men, Dr. Sir R. KANE, Dr. Hoggins and others have left me but little more to say than that, *they* establish *the fact*, that Flax, like all other plants, produced

through the influence of our atmosphere and strength of our soil, must necessarily have, or abstract from it for nourishment a portion of *organic* and *inorganic matter*, the fallacy of the *more* than common exhausting effects of Flax is quite manifest, for in its abstracting a certain quota of the substances of which the soil is charged by the manures—it does not leave it like a discharged cannon, cleared of its contents to the bottom, for as the plant bursts forth from the soil in its expanding form, it only draws in its train matter sufficient to make it shine as a light of one colour amongst the many brilliant and valuable productions of our climate, leaving behind it, (like the revolving fire-works in the Surrey Gardens) sufficient ‘*material,*’ *plastic or combustible*, to produce many other descriptions and colours of light equally brilliant and valuable to the producer. The question then appears to be very plain, and may be answered in a few words, thus; I would say, bring back to the soil, *next year*, the ingredients or substances that the Flax, when on its way to perfection as a brilliant or light amongst our valuable productions, has drawn from it this year, and you have the land as if it had not produced Flax the year previous, and as on this point we have two gentlemen, eminent for their scientific attainments,—professors Kane and Johnstone—it would be superfluous of me to enlarge, or to do more than simply to refer the sceptical to their speeches at the Agricultural meetings, as well as to their writings on the subject: however, a system of *rotation* can be followed that will enable Farmers to produce Flax every year, if the substances abstracted by the plant be returned to the soil in a course of regular and judicious farming. The following course of rotation extending through a series of alternating crops, shews a period of ten years, before the Flax crop *again* comes into the same ground, and which must set at rest all doubts as to its exhaustion.

ROTATION TABLE, showing how to grow Flax every year without having it more than once in ten years in the same soil.

Acres.	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870
20	FLAX	Clover	Meadow	Oats	Potatoes	Wheat	Clover	Meadow	Beans	Turnips	Wheat
20	Wheat	FLAX	Clover	Meadow	Beans	Turnips	Barley	Clover	Meadow	Vetches	Potatoes
20	Turnips	Barley	FLAX	Clover	Meadow	Vetches	Potatoes	Wheat	Clover	Wheat	Oats
20	Beans	Potatoes	Wheat	FLAX	Clover	Grass	Oats	Turnips	Barley	Clover	Mead
20	Grass	Vetches	Turnips	Barley	FLAX	Clover	Mead	Beans	Potatoes	Wheat	Clover
20	Clover	Grass	Oats	Potatoes	Wheat	FLAX	Clover	Grass	Oats	Turnips	Barley
20	Wheat	Clover	Grass	Beans	Turnips	Barley	FLAX	Clover	Meadow	Vetches	Potatoes
20	Turnips	Barley	Clover	Mead	Vetches	Potatoes	Wheat	FLAX	Clover	Grass	Oats
20	Oats	Potatoes	Wheat	Clover	Grass	Peas	Turnips	Barley	FLAX	Clover	Mead
20	Grass	Beans	Turnips	Barley	Clover	Mead	Oats	Potatoes	Wheat	FLAX	Clover
20	Clover	Mead	Vetches	Potatoes	Wheat	Clover	Mead	Beans	Turnips	Barley	FLAX
220											

Suppose a Farm of 11 fields, containing 20 acres each, to be followed on the above system, Flax would be only once in ten years in the same field, and as Flax, Clover, Beans, Vetches, and Peas, are deep rooted plants, I have taken care to so alternate them that they may come in

between the surface-rooted plants, and have also guarded against grain crops following each other, however, much will depend on the nature of the soil and the knowledge of the grower as to the adaptation of his land to the grains or root he may select, as different soils require a difference in rotation. In Belgium Flax invariably follows a corn crop, and that is generally Oats. The same system could be profitably pursued in this country in situations where wheat and barley cannot be grown to pay expenses and leave a profit, for example, in the vicinity of the Newtownhamilton Mountains, about five miles from Armagh, I have seen a *prime quality* of Flax flourishing on land on which nothing but oats of indifferent quality could be produced, and also from the neighbourhood of Keady-town, and around that mountain district, I have seen Flax produced of superior quality. The Flemish farmers bring in Flax in the third year of their seven course rotation, but these people till and manure their land for Flax culture at a labour and expense equal to what our market gardeners give to the culture of their onions or celery, hence is derived their ability to obtain from £100 to £180 per ton for their produce.

DIRECTIONS AS TO CHOICE OF SEED, AND TIME OF SOWING.

I think that there has always been too little attention paid to this part of the subject, and that farmers always appear to forget, in selecting Flax seed, that *seed, known to be from a good and fine quality of fibre should be preferred*. In selecting seed Potatoes or seed wheat, barley, or oats, they prefer the most prolific breed, and the choicest sort for saving; why, then, should not Flax seed be selected with the same precaution? An experiment with seed saved from *coarse bad Flax*, and with seed saved from Flax of *good, fine quality*, tried by practical men, would throw much light on this

point, as it is questionable if seed saved from coarse, bad Flax, will grow so as to produce fine fibre, no matter how well or excellent the quality may appear to be; however, as to the description, I should say (from the many years experience I have had) that Riga seed is the best the grower can purchase; and, as I have been for years both a grower and seller of the article, I know it to be so; and although I have known Dutch seed to produce excellent crops of good quality, yet I have invariably found the Riga seed best suited to Ireland. The Russians grow Flax more for the value of the seed than for its fibre, because their soil and climate will not produce fine or valuable Flax, such as that produced in Flanders or Ireland, and until the harvest of 1858, their average price seldom or never exceeded £35 to £40 per ton for the best kind, because they allow the seed to become fully ripe before they pull it, and, as a consequence, it contains *more oil* than if pulled in an unripe state,—and coming to a more congenial climate, it grows better than any other sort of seed imported. Farmers should take care, in purchasing seed, to select that which is *heavy, plump, and shining*, and be sure that it is from a merchant who will not mix old seed with new, for although two or three years old seed will breard as well as new, or *year old seed*, yet it will not grow within some inches of being as long as the new seed, and therefore, when it is mixed, it is sadly against the grower's interest, as Flax spinners will not give within 20 per cent. of the price for Flax of long and short lengths, that they will give for *even lengths*, or what is termed by the trade *well ended* Flax. Flax seed before being sowed should be put through a close sieve and barn fanners, so that all other seeds of weeds may be got rid of; and as the foreign sowing seed cost the farmers at all times from 12s. to 15s. per bushel, when they cannot get more than 8s. or 9s. for home saved, of *as good quality*, I would recommend every farmer to sow each year as much fresh Riga

seed as will produce him sufficient seed for his following year's sowing, if he does not find an advantage to sow now and then from his own saved seed, without a fresh supply, however, I have no reason to apprehend that he will need one, as I have, in many instances known the *finest* and most luxuriant crops produced from *home saved seed*. Two imperial bushels, if sown on a statute acre, and the ground in good condition, will produce seed sufficient for nearly 6 acres where seed, not fibre, is the object.

I recommend from $2\frac{1}{4}$ to $2\frac{1}{2}$ imperial bushels to be sown broadcast, on an English statute acre (from the 1st to the 20th April is the best time), as if less be used, the Flax will grow coarse and will branch out before it is more than 18 inches to 2 feet in height, and as these branches produce very inferior, dry, and weak fibre, compared with what grows on the stem or stalk, and generally disappears in retting (a system I denounce), it is another evidence of the truth in the saying that "unity is strength," for to me it appears that the plant after it grows 18 inches to 2 feet, has not in itself juice or oil sufficient to support three or four separate branches, and the pull on it from the great number of seed capsules, all of which are draining the oil from the main trunk or stem, so extracts the oil and sap, that not only does the fibre on the stem, which will be *short, dry, and brittle*, be much deteriorated, but that which is produced on the branches be almost worthless. But when sufficient quantity of seed is sown, the plants are thrown up *close, delicate, and lengthy*, with but one lenter or top, until near three feet, and sometimes three feet and a quarter high, on which will be two or three seed bolls or capsules, and being close they quickly shoot up and become tall, just as young fir trees do when too thickly planted, and as a consequence, all the fibre is produced on the *one stalk*—and the farmer has from this course of management a *long, fine, and valuable* quality of Flax, and at least one-fourth more

in weight, as well as in value, to that which their sowing would produce.

DIRECTIONS AS TO SOWING.

The land being well cleaned, pulverised, and in proper state of tilth, from good harrowing and hand-picking, it should be made level by rolling, but to guide the sower it should be marked off in divisions like ridges of six or seven feet in breadth, in order that he may give a regular and equal supply of seed, *to each* and all; this done, the seed should be sown broadcast,—and as the seed should not be more than one inch covered when the harrowing and rolling are finished,—a very light, short tooth-seed harrow, should be drawn to and fro over each marked division, and having got over the field in this manner, it should be all gone over anglewise, as that will spread the seed more equally, and the small drills that are made by the teeth of the harrow in the first instance, will be obliterated. Having finished the harrowing in this way, if the ground be in such a state that the earth will not adhere to the roller, it should be well rolled, as such labour is indispensable on all soils, especially on light soils, for as the seed is small, the earth that covers it should be reduced to mould and made free from lumps, so that the bud which grows into the air may get up freely, at the same time the rolling brings the earth round the seed into a firmness that is requisite to create the moisture that softens and swells it previous to its budding.

THE WEEDING.

This very essential part may be very easily got over if care has been taken in cleansing the soil at the time of ploughing and harrowing, and if attention has been paid to the seed being properly cleaned previous to sowing, but as some seeds of weeds may have escaped notice, any that may appear

should be carefully pulled. I observed on the continent (during my visit, for many years) that they practised this operation as I have seen it done in Ulster. Women and children perform the work by creeping foot by foot on all fours with their clothes made rather tight, and coarse bandages on their knees, as walking over the young plants with shoes filled with nails (as the workpeople have them in general) would so injure some of the plants as to prevent them getting up again, the weeding should all be done one way by the workpeople facing the wind, so that any plants laid down by the operation, the wind might restore them to an upright position. This is the old and best method of doing the work.

HARVESTING OR PULLING THE CROP.

As this operation generally takes place before the time of grain cutting, if the Flax be got in early in April, the crop should be visited daily the last fortnight in July, as by that time it will be ready for pulling, and as the time for pulling is a matter or point that requires a person of some practical knowledge to determine, a little instruction on this important part is very requisite. The best time for pulling is when the straw or stalk, for about two-thirds of its height from the soil, becomes yellow, and the seed capsules are beginning to change from a green colour to a light brown: if it gets beyond this, the seed, aided by the influence of the sun in ripening weather, will draw up the coil from the stem, and consequently the Flax fibre will become *brittle* and *dry*, and the spinning qualities will be much deteriorated. In pulling, the operatives should take hold of the Flax underneath the seed bolls or capsules two-thirds down, but if there should be any short stalks, they should be left behind, pulled last and kept separate; but if the ground has been properly tilled and prepared, well drained and without ridges, laid down flat and evenly, and

good new seed used, there will be *no difference* in the length of the Flax. The pullers should be made to keep the root end *as even as possible*, resembling a painter's brush, as the more straight and regular it is kept in this operation the more the value of the Flax is increased to the spinner, and the grower will find himself amply repaid for any extra attention he may bestow, by the additional price his well handled Flax will draw, compared with the price he will see the slovenly growers obtain for theirs. The handfuls of pulled Flax should be laid across each other diagonally, to be ready for lifting and the necessary operation of taking off the seed, which to save trouble and expense in tying and re-tying, should be done in the field at the time of pulling, as such work can be more easily performed at that time, previous to tying up in sheaves, than at any other time. This mode of management should be attended to at once, for there is great loss of seed if it be stacked or removed from the field until properly dry, and it is more easily handled when it is in sheaves with the seed off. If it is to be managed after the Belgium system, by keeping it over to the following year, it should be dried in the field, *as corn*, previous to being built in the stack, and well secured from vermin, as rats and mice make sad havock by cutting it across, which completely destroys it for any useful purpose.

TAKING OFF THE SEED FROM THE STRAW.

I recommend my Patent Portable Machine, on four wheels, for the taking off the seed. It is turned by a man, whilst a girl attends the Machine, feeding it with the top or bow ends of the Flax stalks. This Machine can be moved on in the field after the pullers, and with sacks and winnow cloths to prevent waste, will be a great *saving* in expense. A covered waggon in case of rain would be an additional advantage. The Machine will be found to remove all the husk as well as

the seed, without doing injury to the latter, and as a drawing of it will be found in another page or section of this *work*, I will confine myself to briefly saying that the seeding end consists of three fluted rollers, a large one and two small ones ; the two small rollers on the top or upper half of the large one which drives the small rollers, whilst the feeder stands at the end, and passes the top end or bows capsules through the open end, when once going through removes the whole, husks, or capsules, and seed, without loss or injury. It is also a CRIMPING or BREAKING, WASHING and WRINGING MACHINE.

DRYING OR SAVING OF THE SEED.

It will be much in favour of the grower if he happen to have fine and hot weather for this part of his work, as the seed bolls should be exposed as much as possible to the sun and air for drying, and in order that they may be well dried, turned frequently. If there be much leaves or broken Flax stalks amongst the seed, they will assist in the drying *very much*. Pass the bolls through a coarse riddle, and then through fanners. Everything should be done sooner than resort to *kiln drying*, for such a system will not be recommended by any man having an idea of the value of the seed, either for sowing or cattle feeding. Common sense must tell us, that seed so small as flax seed, will not admit the application of the heat of a kiln head, as the least over heat is calculated to destroy the vegetable juice, so that no dependence could be placed on it for sowing purposes ; and as to kiln drying it for cattle feeding, it is evident, from the small substance it contains that, if even soaked on a kiln head, much of the nutritious matter it contains must be shrivelled away or extracted by the heat. If the weather be moist, the bolls, or husks, and seed, should be taken to sheds, or under such cover as would admit of their

being spread out thinly, leaving doors and windows sufficiently open to admit a thorough draught, and by this mode, with constant turning, say three or four times each day, the moisture would soon be got rid of as would admit of the bolls being brought into small heaps on a barn floor, when additional means may be resorted to towards promoting their more perfect drying, for example, as the husks with the seed are, when bruised or ground down with oats, beans, peas, or I should say, Indian corn, equally good food for cattle feeding, it would be of no injury to the bolls, but on the contrary, and greatly towards extracting the damp from them. If a quantity of wheat, barley, or oat-straw, cut in quarter inch lengths, were mixed with the bolls on the barn floor, as the dry straw would help to extract the juice or damp from them, and keep them open and separated, it would prevent their heating, and if the grower had in his graineries any field Beans, Peas, or Vetches, it would also be an assistant to the drying of the bolls to mix all together, for as all will be found, if bruised or ground down together, and steeped in cold water, the finest compound that can be given to cattle. This method, or some such method of drying the seed bolls, would be found preferable to having them parched and shrivelled and left half useless from the oil being kiln dried out of the bolls and seed.

Having finished my observations on the cultivation and gathering (in the harvest) of the Flax and seed, it now remains for me to show the way in which the straw or stalks should be treated for our textile fabric; and as I have some late discovery and inventions to bring before the public, I consider it better to *first follow out* the instruction of retting or watering, and grassing, as practised in the North of Ireland and on the continent, where, to gain information, I have travelled for years, so that persons who are prejudiced in favour of the general method of preparing the fibre by decomposition in tanks of water, may be instructed in the *best*

way of doing so, by such practice. This I consider is the more necessary as the system of steeping in HOT WATER, and of STEAMING FLAX straw, has got so much into disfavour in Ireland, as to be condemned by the Flax spinners, and in most cases abandoned altogether by the patentees or ORIGINATORS, and those that unfortunately adopted their method of operating on Flax straw.

MIXING OF FLAX SEED, AND SELLING OLD FOR NEW.

It is a sad and lamentable affair, after the *hospitality, freedom of speech*, and *protection*, which the British Government gives to foreign refugees that come to England, to find that they so far forget their position as to forget all that is honourable in dealing; and as the growth and preparation of Flax in Yorkshire must have been severely injured by the unpardonable offence of mixing and selling old seed for new Riga seed, I must here notice what I have been told by Mr. JOHN BOYLE, a man who thoroughly understands the cultivation of Flax, from forty years practical experience, and who is a man above making false assertions.

Mr. Boyle wanted new Riga seed for his customers. He called on a certain merchant in Leeds and saw samples, but insisted on seeing the bulk. One of the clerks being *rather green*, and not up to the truly unfair *conduct* of his employer, allowed Mr. Boyle to go upstairs, and there he found, much to his annoyance, the mixing process going on, knowing, as he did, that such a practice would be the death-blow to Flax culture in Yorkshire. Let the guilty ask himself if he, by such conduct, deserves the protection our country gives to the *runaways of all nations*.

WATERING, COMMONLY CALLED RETTING, IN IRELAND.

This is the most important part of the whole process and labour requisite in the preparation of Flax, previous to its being brought to market, for without the greatest of care and attention, the grower's labour may be (even after producing an abundant crop) half lost, and he may remain in total ignorance of the cause of it. I think proper to notice this fact early, in order to prepare him for what he may expect if he depend on servants, or others, attending to what he will find to be, *if directed by himself*, a source of profitable amusement ; for, as in directing the work requisite in the process of watering Flax, a person of educated and scientific knowledge, will have an advantage over the uneducated—there is in this part of the science, to be learned, a wide field for improvement and study, and particularly for those who have an idea of the *cause and effect* of fermentation. In the first place, the stalk on which the Flax has been produced is, when pulled, as tough as wood of the rattan sort, and that, from the fibre being bound round it, as tight as if it was actually glued to it, the question is, *How is the fibre to be got separated*, and clean off the *wood or stalk* ? Many plans have been resorted to by men of experience in chemistry, and especially by linen and cotton bleachers, who have practical experience in the use of alkalies and bleaching liquids, and with those I have known steam pressure used of a *high degree*, and *without success*, for in every instance where chemical substances have been used, in trying to separate the fibre of Flax from the wood or stalk on which it is produced, the spinning qualities of the fibre have been destroyed, for the gluten, or adhesive matter, so necessary in causing the fibres to adhere to each other, as they pass through the hot water in the trough of the spinning frame,

being once removed by CHEMICAL COMPOUNDS, the fibre becomes almost worthless. The question then is, how can the fibre be freed from the wood without injury? the only answer that I can at present give, is, be guided by the following directions and you are certain to separate the fibre from the stalk on which it has grown, without injury to the spinning qualities of the Flax, such as are still generally used in making yarns for linen goods.

If the grower be near to a river, or small stream of soft water, he should dig and prepare his pit, as near as he could, by a sluice, fill it at any moment. He should dig down, from three feet and a half, to four feet deep, and make from ten to twelve feet broad, and judge of the length according to the quantity of Flax he has to steep; and as water, coming from iron or copper minerals should never be used, spring water, on this account should be avoided, but if used, it should be collected *some months* before being used, so that the air and sun may extract the gaseous impurities; therefore, river water being the best, let the pit be filled from two feet to two and a half feet with water, and let one or two persons strip and go into the water, and take the bundles of Flax *one by one* and pack them in a leaning or a sloping position, the root end downwards, and the top leaning off: let this be done from the upper part of the pit downward, packing the sheaves in rows, and by that time, the two and a half feet of water will cover the Flax, and the pit will lastly have in it three and a half feet of water. It is then necessary to cover it with rushes or ragweeds, previous to covering closely with moss, sods, or old lea sods, which may be used as they are the most easily gotten. The cover is to prevent the air and light affecting it. The shear end of each sod should be fitted so as to make a perfectly close cover; and as the fermentation will cause the Flax to swell, additional weights should be laid across it, such as planks or poles of timber. It having been proved that the water in

which Flax has been steeped is equal for many purposes to the best liquid manure, I shall hereafter specially notice it. I recommend a second pond being made, sufficiently deep to drain off all the water by a sluice from the first pond, and when the Flax is sufficiently steeped, as it will be in from ten to fifteen days, according to the nature of the water and temperature of the weather, drain off the water ; but, before the water be let off, the grower should see that the Flax has had sufficient time in the water, and as it is to this I refer, where I say, “ the grower’s labour may be half lost,” etc., it is necessary to call particular attention to it. The object in placing the plant under water until the mass becomes so putrid that fermentation sets in, is *to rot* or *decompose* the woody part on which the Flax has been produced ; as the old system appears, to some parties, the best way to free the fibre from the firm grasp it has of the wood, without being *altogether injurious* ; and as, by the process of fermentation, the water is so heated as to abstract all the putrid matter from the fibre, until the water itself becomes so rotten and acid, as to rot the wood or stalk on which the fibre has grown. Care must be observed, *at this stage*, that the Flax be not too long in the pit, for a few hours *too much*, after the fermentation has got to its height, and commences to subside, may do the fibre great injury, as frequently the change is very rapid, and in that case the fibre is much tenderer and weaker ; therefore, after it has been eight days in the water, if the weather be warm, it should be looked after two or three times a day, and a few stalks, taken from several places in the pit, examined, and if, by breaking the stalks in two or three pieces five or six inches apart, it is found that the broken pieces will leave the fibre freely from end to end, without tearing any of the fibre with them, the whole of the Flax may be removed from the pits when the water is drained off. This should be done by men going down into the pit, and without the use of fork or any implement, the

Flax should be carefully lifted by the hand out on the bank, where it should remain for twelve or twenty hours on the root ends, to allow all the water to leave it, and care taken that the water so drained be run into the second pond, to be managed as I shall hereafter describe, and as light colour is preferred, a few buckets of clean river water thrown upon it before being removed to be spread on the grass would serve the purpose.

BELGIUM, OR COURTRAY SYSTEM OF STEEPING FLAX STRAW.

This method of softening the fibre, and getting rid of the *gum* or *resin* which binds the fibre to the wood or pith on which it is produced, cannot but be acknowledged as the best, when we consider that no Flax comes into England, in point of value, equal to Courtray Flax, and as I place my facts before the public (not flimsy theories) I shall show the opportunity I have had of judging of their practical value.

During twelve years residence in Belfast, from 1830 to 1842, engaged in the selling of yarns, and the purchasing of Flax for English spinners, giving employment to from 1,500 to 2,000 weavers, making all kinds of linens, sheetings, drills, damasks, and cambric, and turning over from £5,000 to £6,000 per month, in one bank (the Northern Bank), I had the best opportunity that an individual could have of knowing the difference in the **STRENGTH** and **VALUE** of all kinds of Flax ; and as we often had 1,000 weavers in the vicinity of Ballymena, Ahogill, and Maghrafelt, making both light and heavy, *fine linen*, and 1,200 weavers in Lurgan, Banbridge, and Guilford, making **LINEN DRILLS**, **DAMASKS**, **LAWNS**, and *cambric handkerchiefs*, I fearlessly assert that we never could get yarns from any Flax but **COURTRAY**, spun above 70 lea, on which we could depend for *prime warp yarns*. Our best supply was

70 lea, from Messrs. German, Petty, and Co., Preston, spun from Courtray Flax, and all our warp yarns above that were from Messrs. Hives and Atkinson, of Leeds. We often got 70 lea spun from best Irish by Messrs. Crosthwait, of Dublin, very good for light linen, but the price was up to the price charged by Messrs. German, Petty, and Co., and we could not depend on its being regular as we could on the Courtray. The reader will see with such practical proofs of the strength, the real value of yarn spun from Courtray Flax, compared with the production of *all other countries*, that, in the course of preparing, there must be, in Courtray, some novelty the others do not practice.

Now, as I have travelled through the Flax districts on the continent, and watched with attention and great interest, the way in which the Courtray system of steeping, (for I deny it is retting) is carried on, a few words will suffice to show, *how it is* that the Courtray Flax is stronger than the decomposed fibre. Crates, not unlike those used by Delft and China merchants, for packing purposes, are brought to the river Lys, a fine stream of *soft water*. Water, soft and pure, is requisite. Stakes are then driven into the bed of the river to which the crates are fastened, lest they should be carried away by the stream. The Flax straw is then packed in the crates and bound so that it cannot float out, the water passes through, and the friction produced by its passage through the Flax straw macerates or softens the *resin* or *gum*. The water carries with it *all the colouring matter* which, in pits, necessarily remains in the Flax, and hence it is that the Courtray colour is invariably a *light yellow* or *cream colour*, the fibre clear, clean, and strong—whilst the Dutch and Flemish Flax is dark and full of the rotten dust, which the decomposition of the wood or pith causes to adhere to the fibre. Such are my views, and I cannot but think that there is, in England and Ireland, water sufficiently pure to prepare Flax on *the same*

principle, if the matter were placed in proper hands ; scientific men, such as Sir R. Kane, who have made the Flax plant their study.

GRASSING, OR SPREADING, AND LIFTING.

After the Flax is removed from the steep, the next operation is that of Grassing, or Spreading, as some term it. This process is not only requisite in order that the water may be finally drained off and extracted from the plants by the heat of the sun and current of air, but if the Flax be not *sufficiently watered*, the damp grass (as it is generally on new mown meadow or grass land, well cleaned, that it is spread), and the dews at night will help to finally finish it ; and it will be found to take from six to twelve days on the grass, according as it has been watered before it was ready for lifting. If spread on pasture ground all docks, thistles, ragweeds, &c., should be mowed clean off, so that the Flax may be even and thinly spread on the grass, as that will assist its being gathered up evenly, and tied in sheaves when finished ; but, as the sun changes the colour unless it gets to it *all equally*, it should be turned every other day while on the grass with a rod about seven or eight feet long, and one inch and a half round ; if it be turned before rain (if rain should happen to be near) all the better, as rain settles it on the grass, keeps it from being blown about, and facilitates the finish of this process. When it is ready for lifting the wood will easily break, and if it separate from the fibre readily, leaving it unbroken, it has had sufficient of the *grass, sun, and air*, but if near to a Flax scutching mill, a sheaf should be cleaned before it is lifted, unless a practical person has seen it, and is confident of its being finished.

LIFTING THE STALKS OFF THE GRASS.

Lifting the stalks off the grass is a matter that requires some attention, as keeping them straight and the ends even prevents loss in the breaking and scutching mills, which is the next process, and if it be built in small stacks in the field, so that the air may get through it freely, previous to its being built in the stackyard, to stand over-year, it will serve it very much; for, as the old foolish system of fire-drying is now so well known to be ruinous that comment is unnecessary, it cannot be too strongly impressed on the grower's mind, how requisite it is, to have it *well dried* by the sun and air, previous to building in the stackyard, to stand over-year in a large rick, for then it will only require a little exposure to the sun and air in coming spring and summer, as it is opened up and made into handfuls for the next operation.

WEEDS IN FLAX.

Several persons, for whom I have imported seed from Belfast, have, from time to time, complained of the injury sustained by great numbers of the Flax plant, from a *weed* commonly called "dodder," the seed of which had been allowed to remain amongst the Flax seed. For the guidance of growers I insert the following extract from a paper, on the parasites of crop and pasturage plants, by Dr. Mateer, Professor of Botany in the Royal Belfast Academical Institution, shewing the necessity of selecting Flax seed *free* from an admixture of other seeds, or at least of separating all other seeds, by sifting before sowing:—

"Plants which grow on the same soil with crop or pasturage plants, in plenty, are hurtful, by taking away the nourishing ingredients of the soil; yet they become much more so, when,

as in the case of parasites, they grow on other plants, and at the expense of their proper sap. The dodders are remarkable for their destructive effects in this way, those in particular infesting the clover and the Flax. The former kind is not met with here, but the Flax dodder does often occur. Last year, I had some samples of Flax given me on which the dodders were abundant, and it was mentioned as being of general occurrence in many fields. Like a bundle of entangled threads, these plants lie on the Flax, twisting round the stems and binding them together. Such samples are usually not so fully grown as others. Fortunately this kind is not indigenous, being brought over with the seed of the Flax, and mostly the Odessa or Riga Flax seed. The indigenous dodder is "said to grow on Flax; but it is believed that it is always this exotic species that infests it, and it does not appear, notwithstanding the yearly renewals of it, that the parasite is likely to become naturalised."

FLAX STEEP, OR WATER, A LIQUID MANURE.

Having advised that the water in which Flax has been steeped or retted, should be taken care of because of the fertilising properties of the matter it contains, and the proof I have had of its value during the year 1847-8, in the cultivation of flowers, as noticed in two London newspapers, the *Gardener's Chronicle and Agricultural Gazette*, and the *Gardener's and Farmer's Journal*, I will briefly refer to my experiments. I first experimented in my flower garden, situated in De-Bauvoir Square, London, using Flax water in the cultivation of dahlias. I selected six plants out of thirty-six I had in my garden, and when about six inches long after having properly taken with the open air and soil, I gave them the same quantity of Flax water as I gave the thirty other plants of the New River Company's water every other day,

until they all got on to require it every morning. I soon found the plants treated with the Flax steep to get ahead of the others, and I continued to treat them in the same way regularly, between five and six o'clock every morning, and very soon found that ordinary sticks were useless, as the six plants got up fully six feet high. I then purchased three dozen of iron rods of 10 feet each, and having placed them also round the plants, I commenced my work with soft twine, to spread and tie up, until I had three out of the six that were in the centre of clumps fully ten feet in height, whilst out of the thirty I watered every morning with the New River water, and in the same proportion as I used the Flax water, none of them grew above four feet in height, nor were the stalks *half* so thick as those that got the Flax water—but this was not all, for my toil was well repaid by the magnificence of the bloom—for never was the snowball made *more round* and perfect than those beautiful white dahlias, which appeared in scores on the overgrown plants, to the admiration of all who saw them, and two gentlemen, Mr. Neil and Mr. Bamstead, expressed their high admiration of them. The flowers were large, and as close as could be packed from the centre, until they turned round to the stem, and appeared as a snowball. I had also spotted, yellow, scarlet, and crimson, equally large, perfect, and beautiful—and I sent specimens to Mr. Mardock, of the Regent's Park Botanical Gardens, London, and also to Professor Lindley, editor of the *Gardener's Chronicle*. I also tried it on the roses and geraniums, for the killing of green flies, and for that purpose nothing could be got like it, and in the cultivation of hydrangias I found it equally useful, as nothing could exceed the blow I had in 1848. From the above facts I can recommend its use, confident that the lovers of flowers will not be disappointed in trying, as I have done, the experiment, for as I know, Flax water, when let out of the pits in Ireland, at my own mills near Armagh, killed the

trout and other small fish in a rapid running river, it struck me that I could not be disappointed in using it on the little pests that were destroying my roses and other flowers, it therefore served the double purpose of destroying the insects and of feeding the plants, in short, it is an excellent liquid manure.

Judging from those experiments, and observing Sir Robert Kean's remarks on the experiments made, by his advice, at Market-hill, as described by the parties at the Market-hill Agricultural Society's meeting, I have advised a second pit to be prepared, at least three feet and a half lower than the first, as a receptacle for all the water or matter which may drain from it, and as charred ashes can be procured by any farmer who has bog ground, or old meadow ground, I should say that a proper quantity should be prepared, and drawn to the pit. Should there be no dry ashes, turf mould, or rubbish and weeds, will be sufficient to absorb the fertilising matter that the steeping in water, heated by fermentation, had abstracted from the Flax during the macerating process, and having it thrown into the pit to collect and take up the liquid, it should be turned out again to leave room for more steep water, and placed in a heap by itself as manure, or under, and as a bottom of a dungheap for the year, where it may imbibe other fertilising matter that may drain down to it from the farm-yard manure, and no doubt but it will turn up in spring equal, if not better, than the best manure made on the farm.

FLAX SEED FOR CATTLE FEEDING.

It has now been proved beyond any reasonable doubt that nothing can be had equal to linseed for feeding all kinds of farm stock, when ground and mixed with oat, bean, or pea-meal, and that although oil-cake, when unadulterated, has been found very good, it has not been found so economical as

feeding on the *pure seed*, especially when soaked by steeping in cold water for twenty-four hours and prepared for cattle by being mixed with *cut straw, chaff*, or *hay*, as I have known it to be used by the most extensive and scientific gentlemen farmers in Ulster, and by one in particular, whose cattle and farm I had many opportunities of seeing as he (Mr. Edward McKane) lived within one mile of my farm at Ballymoran, (where I had Flax breaking and scutching mills, and where I resided up to 1830), one mile from the demense of His Grace the Lord Primate, within two miles of the city of Armagh; and as I have been applied to for information on the subject by Mr. Thomas Duggan, a gentleman of Dublin, and have referred him to Mr. McKane for practical instructions, knowing him to be one of the most extensive and scientific farmers in Ireland, and having also been favoured with copies of the correspondence between these gentlemen, I cannot do better than give the questions put by Mr. Duggan, and the answers he received from Mr McKane, whose polite attention has been in keeping with his comprehensive views and desires to promote improvements in agriculture:—

On the subject of Flax seed for cattle feeding, I go back to 1850 for evidence procured by a friend in Dublin to show by practice its superior merit.

“ 101, Middle Abbey Street,

Dublin, May 8th, 1850.

SIR,

As I have been advising some tenants of mine, in Carlow, to grow Flax, on account of the value of the seed for feeding cattle, as well as the value of the fibre, and have been told by a gentleman that you, so far back as 1830, had a steam apparatus for the purpose of boiling and steaming linseed meal with *chaff*, *cut straw*, *hay*, *potatoes*, etc., and in fact that you were the first gentleman in Ulster to find out the secret and economy of grinding and steaming, or boiling

linseed with bean, pea, and oatmeal, may I request of you to favour me with a few lines on the subject, informing me of your expense, and the best method of preparing the seed of Flax for feeding cattle. Your compliance will greatly oblige

Your obedient servant,

THOS. DUGGAN.

To Edward McKane, Esq.,
Ballyhardan House,
near Armagh."

"Benburb, May 12th, 1850.

SIR,

My absence from my farm prevented my receiving your letter of the 8th till yesterday. That must be my excuse for not replying sooner. I now beg to say that I do not grow Flax for the value of the seed for feeding purposes, but for the value of the Flax itself; however, I have been able to use the seed without, I think, injuring the quality of the fibre. The plan I pursue is to have the seed boughs (or bolls) taken from the Flax as fast as the Flax is pulled, by machines we call "Ripples," in order that the Flax may be put into the steep with as little exposure to the air and light as possible. The Flax boughs I then send to a corn kiln and have them well dried; they will then keep *for years*. I get them ground as I want them. Should too large a quantity be ground at once, the oil being expressed from the broken seed it is liable to foment, and of course will not keep.

With reference to your enquiry as to steaming food for cattle, I think that steaming *is not economical*, except the farm establishment is large; for a moderate farmstead I do not think, that a boiler that would boil thirty gallons of water, would cook perhaps twenty stones of turnips or potatoes with as little fuel as will be required to get up the steam for common cooking the same quantity in a separate machine. As far as

my experience goes I do not put any value on boiling or steaming cut hay, or straw, linseed, beans, and pea meal, for all old animals, horses, cows, and pigs. I steep in cold water say twenty-four hours before using. For young calves, young pigs, and for one or two feeds in the day for dairy cows, I think well cooked warm food useful.

I am, Sir,

Your most obedient servant,

EDWARD McKANE

To Thomas Duggan, Esq.,
101, Middle Abbey Street,
Dublin."

I am happy in having from Mr. McKane's pen, through Mr. Duggan, his method of preparing linseed for cattle feeding, as from the many years he has had as a practical man, he must be looked up to as an unquestionable authority, for as he has spared no expense in bringing his farms at Ballyhardan, (which I recollect him getting into possession of, about the year 1820) from a worn out condition to the *highest state of perfection*, his experience in agricultural matters are well known over Armagh, the most prosperous county in Ulster, therefore as Mr. Warrens, a farmer in Trimingham, Norfolk, has got his name up since 1843, in England, and also in Ireland, through the circulation of the Belfast Flax Society's Reports, as the originator of the secret of grinding and boiling linseed-meal into a mucilage for cattle feeding, recommending what Mr. McKane practised thirty years ago, if not more, mixing it with chaff, cut hay, turnip-tops, mangel wurzel leaves, and other roots. It is not doing justice to Irish farmers, and Mr. McKane in particular, to allow Mr. Warrens to plume himself on being an originator, while in reality he is as great a *copyist* in preparing seed for cattle feeding as he is in the *science* of Flax management after the crop has been grown; and his several letters to me in 1843 and 1844 in my possession, will

prove the fact: however, as the vanity of the man may be imagined from his own writing, I shall here insert an article of his from one of our Journals so that, *Let era scripta manet*, as proof of the facts.

“Mr. Warrens of Trimingham, Norfolk, in a letter to the *Reporter*, writes:—

“I must now entreat the reader’s attention to the following facts. 1st. That my earliest information on Flax was derived from Captain Skinner, the former secretary of the Belfast Society.* 2nd. That I engaged three of the same Belgians who formed the first staff of instructors to the Irish. 3rd. That with those men, I overcame difficulties such as were never thrown in the path of Mr. M’Adam, and attained at my own cost the very object which he, the secretary, supported by the funds of an association, *failed to accomplish*. 4th. That my establishment for handscutching was the receptacle for the off-scouring of the workhouse, for the outcasts of the prison, and for the nondescript, idle race, such as few were willing to employ upon any terms. 5th. That most of these became expert scutchers, and none departed to seek more permanent employment without manifesting gratitude and improvement, both in morals and conduct. 6th. That the above remarks apply with equal force to girls and to women, who, thus trained to labour, obtained situations as household servants, and may be considered independent members of society. Need I refer to children and youths now in my scutching-room, contributing to the maintenance of their parents? While in Ireland they sit, as I understand, “scorching their knees before workhouse fires,” the scutching mills all the time performing their work.

“I question whether a single youth taught at the expense

* About the year 1843. Warrens should have added—“and from J. Hill Dickson, of 29, Broad Street Buildings, London.”

of the Royal Flax Improvement Society could be found, amongst the Teutronics of the North, capable of preparing a crop of Flax for market."

How absurd such bombastic braggadocia as this must appear to the Committee of the Royal Flax Society, Belfast; as that society has been the means of supplying the entire kingdom with instructions, for years before Mr. Warrens was heard of more than others of his equals, the tenant (middle class) farmers in Norfolk, and many years before Mr. Warrens thought of writing his pamphlets from *their reports*, and the letters and information he ingeniously obtained *from me*, for *that purpose*, at the very time he acknowledges that he got his earliest information from Captain Skinner, the former secretary of the Flax Society. The *onus probandi* he gives for the difficulties he overcame, are in keeping with his assertion that "it was doubtful if the Belfast Flax Society taught a youth so that he was capable of preparing a crop of Flax for market." As to "what the secretary of the Flax Society with ample funds failed to accomplish," but which he had achieved without help, and at his own expense, I am at a loss to know; but judging, *ipso facto*, that when he called on me in February, 1845, and acknowledged before Sir Edward Baker and other gentlemen in my office, at 29, Broad Street Buildings, London, "that he got a great deal of information from me on the subject,"—and that he was then offering Flax, some of which he said he had sold to net-makers at 5s., and some 6s. per stone, which I knew was well worth from 8s. to 9s. per stone. I should say that his apprenticeship is scarcely finished yet, and therefore, to assume being *more capable* of instructing parties in managing Flax than the Belfast Flax Society, and to publish such in a newspaper is, in my opinion, more like the act of a man *non compos mentis*, than a man of sound mind; however, as it is an old saying that, *virtutis nemo sine nascitur*, I leave Mr. Warrens to enjoy the profit and *otium*

cum dignitate, with which such egotism is calculated to inspire him, but I fear he is not possessed of the mind of the Spartan philosopher, whose maxim was, "*Know thyself*," otherwise he would not write so of his deeds, and condemn a society from *whose reports and my instructions* he wrote his pamphlet.

I observe that he has, in 1848, discarded his system, his *ne plus ultra* system of cooking Flax seed by *boiling*, and which for three or four years, he argued was the most economical and best mode of preparing it, and adopted the system of steeping in *cold water*, a system that Mr. McKane had practised for more than a dozen years, and which by his letters to Mr. Duggan, he recommends *before all others*. What must the quietly disposed Norfolk farmers think of *the great novelty of the boiling secret*, now, that he (Mr. Warrens) is an apprentice to Mr. McKane's mode of preparing it by steeping in *cold water*. The following is an extract from the *Agricultural Gazette* on his blunders respecting box feeding.

"*Flax culture and box feeding*.—I think it very important that gentlemen when they put forward pet schemes in farming, ought to be as correct, full, and fair in their statements as possible, giving in every instance an account of failure as well as of success, otherwise the incautious may be misled and seriously injured. I observe what I judge to be an error in Mr. Warrens' statement lately, of barley meal consumed in feeding twenty-eight beasts, only £4! If I recollect, Mr. Warrens' compound is composed of one part linseed and three parts meal; in this case the account would be fourteen quarters linseed, £35, and forty-two quarters barley meal at 30s. per quarter, £63; together, £98, instead of £39, as stated."

GUY.

As to the system of box feeding, however commendable it may be, as to making manure, I would not credit it as true, that an animal shut up in a box or crib and allowed to remain

lying on a layer of straw sprinkled over with its own excrements, could thrive as well as if stretched on a clean bed free from noxious gases ; the positive comfort of the animal, let alone the appearance of cleanliness, is a matter of no little importance to a farmer who delights in his profession. Having had an opportunity of seeing cattle shut up as described, I had no desire, from the stench arising from the boxes, to remain long an observer ; for, however useful it may be to keep manure close and allow as little as possible of the gases or ammonia to escape, I need not be told that neither horse nor cow could thrive any better, if at all, by being shut up in such a foul atmosphere. Some people, however, have little regard for cleanliness, their chief aim being to make money by a saving of labour, as there will be less work by only occasionally cleaning out the boxes, than if they were to be done every morning ; so that the filthy, or lazy system of box feeding, is, in my opinion, likely to be preferred by *the slovenly only*.

I observe that as food for calves, Flax seed boiled and mixed with hay tea, is one of the very best substitutes for milk that has been discovered. A compound should be made from this tea mixture and skimmed milk, with the addition of bean or pea meal boiled as light as thin porridge ; and to prevent the mixture from disagreeing with the young animals, which a sudden change of food is *certain to do*, the quantity of milk should be *decreased*, and the tea from the Flax seed and hay *gradually increased*. The economy and the good results of this course of feeding, will soon prove to the satisfaction of the farmer that he has found out a desirable mode of economizing milk, by the gain of a substitute in *Flax seed*.

PART II.

INSTRUCTIONS on Crimping or Breaking Flax and Hemp Straw, Green or Retted, Rhea, &c, &c., by Dickson's NEW PATENT CRIMPING AND BREAKING MACHINE—INSTRUCTIONS on SCUTCHING FLAX, by Dickson's SELF-FEEDING TREBLE BEATING, SCUTCHING, SCRAPING, BRUSHING, and COMBING MACHINE—INSTRUCTIONS on WASHING and WRINGING FLAX and HEMP, by the same PATENT MACHINES for Washing, Wringing, and Drying—REMARKS on the advantages of the above Machines—EXPENSES and ECONOMY compared with that of preparing Flax by the Breaking and Scutching Machinery in use in Ireland—INSTRUCTIONS on the *mixing and using* of the PATENT PRESERVING LIQUID—OBSERVATIONS on the above, as by such system and machines, Green Flax and Hemp can be taken from the field without Steeping (called 'Retting,') and can be made soft and fine *at pleasure*, so that it will receive and retain a PERMANENT BLACK that SULPHURIC ACID, MURIATIC ACID, strong soda, or spirit of salt CANNOT REMOVE—ADVANTAGE of Dickson's permanent Dye for Cotton, Silk and Wool, as well as the several Indian Fibres, Flax and Hemp, (as exhibited in the LEEDS INDUSTRIAL EXHIBITION) *died various colours.*

CRIMPING, breaking, or bruising Flax or hemp straw, Rhea, &c., whether in the green state as it comes from the field, or after it has been retted, is, so far as I can judge by practically working various machines, the most important part in the preparation of the plant, in fact, good breaking is three-fourths of the work required, for if the straw be broken through a series of *coarse and fine fluted rollers* there will be little work to scutch out after, and as my breaking machines are kept in a *beating* and a *rotary motion*, springs and weights, so as to allow any amount of pressure I please to give, according to the quality that is to be prepared of hard or soft fibre, it will be at once observed

by any one acquainted with the preparation of Flax and hemp, that my machines for breaking cannot be surpassed, if equalled.

The machine can be fed by a man or woman. No particular craft or skill is required further than to spread the Flax or hemp-straw level and even at the ends on the feed end, commencing at the coarse side, No. 1, and finishing with the fine side at No. 3 feed end.

The great advantage gained by the new and peculiar features in the movements of this machine, arises from the IN AND OUT MOVEMENT of the CRIMPING ROLLERS, which admits of *one end* of the Flax or hemp straw being in *the hand* of the *attendant*, and as a consequence, not a *stalk*, *reed*, or *blade* of fibre can be lost, as it will neither be *tossed*, *entangled*, or *disturbed*, but when one end is finished, the elastic band is brought down the bunch, and the undone end turned into the machine for the same finish as the first, by this mode one-quarter more of fibre *can be obtained from the same weight of straw*, to that got from any breaker yet invented, that has been WORKED, or KNOWN, or HEARD OF.

SCRAPING, SCUTCHING, BRUSHING, AND COMBING.

This being the finishing part of the process, is one requiring the eye of a manager, a man skilled in the value of Flax and competent to judge of its being well prepared, for although any boy or girl can be trained in one day to attend the machines, yet it is necessary that a manager be over them to show them how to put forward and draw back the feed-drums, and to show them how they can get to understand when the Flax, Rhee, fibre hemp and other fibres are scutched, combed, and ready for market.

WASHING AND WRINGING.

After the Flax and Hemp and such fibres as RHEEA, PINE-APPLE, AGAVE, &c., from our Indian empire, upon which I have been experimenting, have been broken and scutched and released from the wood and resin or gum, the part of the machine for washing and wringing through hot water, must be put into requisition, and as the tank for the LIQUID or WATER is placed on the top of the machine for BLEACHING, WASHING, and WRINGING purposes, with the agreed for and exclusive right and use of Messrs. Atkins and Sons patent carbon filter, a matter of the greatest importance in obtaining a *clear white* and a thorough bleach, and for such a purpose no filter has yet been produced equal to it. The operative has only to turn on the tap and BLEACH and WASH, HOT WRING and HOT MANGLE at pleasure, according as the material be fibres for the use of COTTON, SILK, WORSTED, or FLAX SPINNERS, or be SHIRTS or other linens for household purposes. For any or all of the above uses the machines will be found to be unequalled, for saving in expense and expedition, and free from injuring material in the bleaching, washing and hot finishing. The hot water being turned on through the axle into the *centre band* or drum of the washing machine, a few turns will soon free the fibre from any green colouring matter, gum, or resin, without loss by decomposition; and the wringing machine being supplied with steam in the centre drum, over which the Flax and hemp passes, I am enabled, by the use of this machine, to more than half dry the fibres as they pass through it.

EXPENSES AND ECONOMY.

The expenses and economy in the working of my machines, compared with the very inefficient machines used in this country and Ireland, can be summed up in a very few words. *Skilled labourers* (such as men called scutchers) are entirely dispensed with. The machines will do *double the work* by being attended by girls at 1s. per day, to that of Irish scutchers at the rate of 3s. 4d. per day, which I paid at my factory in London.—(See the report at pages 17 to 33.)

MIXING AND USING THE PATENT
PRESERVING LIQUID.

The mixing and using my Patent Preserving Liquid must be regarded as a matter of deep interest, inasmuch as nothing but practice will enable the operator to be always successful in producing the most favourable results. However, one thing is certain, by this process the fibre *cannot be injured*, as is the case very often in *retting* and *decomposing* by steeping in HOT OR COLD WATER; for, as the chief article used in the oil taken from *Flax seed*, RAPE SEED, and COTTON SEED, or oil from any other vegetable, to which we add a portion of turpentine, and as much ammonia as will make the whole compound into a saponaceous liquid, when a similar number of gallons of hot water are added. Such a mixture must preserve rather than injure the fibre. Rhee, Flax, Hemp, or any other of the various fibres of India, to which I shall hereafter refer, being immersed in this liquid, will imbibe sufficient oil to add both to the strength and spinning qualities of the fibre, and it entirely depends on the operator whether he obtain *fine* or *coarse* fibre. As to the labour and expense of preparation, one thing is certain—that, from £12 to £16 per ton, even for the

finest quality, will cover the whole cost for machinery, liquid, and labour.

Vats for the purpose, being fitted with a false bottom of galvanized-iron plates, perforated so as to let the steam be spread regularly under the Rheea, Flax, and hemp, the fibres are suspended by holders *on the vat*, and the oil, ammonia, and turpentine, are all poured into the vat; a cover being then screwed down, the steam is let on, and the tap that lets in the hot water at the bottom of the vat being turned, the water being the heavier body, *forces the oil*, etc., up from the bottom right through the Rheea, Flax, and Hemp, until it is perfectly saturated and finished. Every drop of oil that the fibre has not absorbed, can be drawn off at the top, and re-used.

The Rheea, Flax, or Hemp are then removed, and worked through the washing and wringing machines, and if a perfectly white colour be required, a scald of soap and water will do all that is needful, but if strength be all that is wanted, I object to the use of much soap, although we have the authority of the firm of Messrs. Marshall and Co., of Leeds, to prove that soap will make any fibre finer in quality. This I admit, for I patented the use of URINE and SOAP in 1854, but I found the soap dangerous in using it, and that it injured and made the fibre *tender* unless great care be taken, and although I find that Messrs. Marshall have become owners of a patent taken out in 1856, by a man named Jennings, in Cork, who, after using all sorts of acids that are known to be destructive to the preparation of the fibre, finished up with soap as his chief ingredient. I have, therefore, only to inform Messrs. Marshall and Co. that I patented the use of soap in 1854, and that they have purchased from Mr. Jennings a patent taken out in 1856, which is an infringement on mine—the date being two years after my patents were sealed. I therefore tell the public that Jennings's Patent, purchased by Messrs Marshall and Co.,

is a *fraud*—a compound from Claussin's and Dickson's Patents, of 1851 and 1854.*

My views on preparing Flax and hemp, and also the resin bound fibres of India, cannot be better explained than by the following copy of a lecture given by me last spring in Leeds, on the "Fibres of India, and their adaptability to the purposes of silks, foreign flax, wool, and cotton," before the council of the "Leeds Chamber of Commerce," D. Lupton, Esq., J.P., President, in the chair, in the Council Chamber at the Leeds Court House.

LECTURE.

SIR,—In accepting the privilege of placing before you and the other gentlemen, members of the Council of the Chamber of Commerce, who represent the great staple trade of Leeds, my productions in fibres from East and West India, through my discovery of inventions, for which I am protected by patents, I feel the subject cannot be done justice to, unless by describing the results from my practical observations on the various plants named in the circulars which you have received; nor can any correct idea of their importance to the manufacture of yarns be formed, except by a personal explanation from me. Such a course, I have also considered to be necessary, with a view to the extension of the principles of my inventions, to a practical issue, and their general adoption by the trade, rather than to the exclusive advantage of any member thereof; unanimity and co-operation being, in my opinion, indispensable to the success of the enterprise. The results of labour and researches, which have extended over twenty-five years, in the Flax, yarn, and linen manufacturing, and in the bleaching department of this industry, have led me

* See Patent Office reports, on ALL PATENTS, to be had from fourpence to sixpence each.

to the conclusion, that certain raw materials hitherto *comparatively unknown*, and their commercial value *unappreciated*, may not only be used with advantage in connection with the spinning of Silk, Flax, Wool, and Cotton, but may, in many cases, supersede their use in point of *economy, texture, and durability*. The specimens now before you, most of which are from India, are what I produce in proof of my assertions.

SIR,—Every man who thinks *seriously* and *feelingly* on the *past* and *present* position of our relatives and countrymen in India, must agree with the opinion of that great and good man, Dr. Livingstone, namely, that there is something more than scriptural influence required to civilize and re-establish the Indian Empire. Indeed, the development of the vast agricultural resources of that great country, on a scale, commensurate with their extent, has been frequently urged by our legislators, as one of the most desirable auxiliaries to that end; but owing to the absence of any known test of their value and efficiency in the particular direction to which I allude, and the ignorance which prevails upon many of the vegetable products of India, all have felt the difficulty of dealing with the subject, or of propounding any scheme for the adequate employment of the vast population. Nor is such my intention, beyond asserting, which I do with the greatest confidence, that India presents a rich field of enterprise to the manufacturers of this district, independently of its cotton plantations, and by availing themselves of which, they may contribute, in some measure at least, to the regeneration and future prosperity of that empire.

Such material as that now before you from India, can be produced for spinning, at from 4d. to 6d. per lb., and it is important to know that the supply is *unlimited*, or at all events, equal to an excessive demand. I have this information from unquestionable authority. I enjoyed the personal friendship and correspondence of the late talented Dr. I. Forbes Royle,

of the East India Company, the greater part of whose life was spent in India. For the last three years of his life, month after month, I received from him all sorts of Indian fibre for testing and experimenting upon, and the result was perfectly satisfactory. Among other lots, forty large bales of wild Rheeia fibre were prepared at my factory and sold at £35 to £40 per ton, although not operated upon by the patent liquid. Dr. Royle assured me there was no limit to the supply of the same material along the banks of the Indus, the Ganges, the Himalahs, and other places, and the reports of my much respected townsman, Sir James Emerson Tennant, on Ceylon fibres, are equally favourable as to the supplies. I also hold some dozens of letters from Calcutta, Madras, Ceylon, and Bombay, inquiring about my patent machines, in consequence of Dr. Royle having, in his last work on India, made use of my name as an inventor of machinery for preparing such fibre for spinning, with success; and the East India Company also, with a vote of thanks for what I placed before them of prepared fibres, recommended me to apply to the Government in India for patents, when no such thing as patents for India were granted to any one; this object was not carried out, owing to the English Government objecting to give such power to the Indian Government. I may here observe that such intermeddling policy has been one of the drawbacks to the industrial resources of India being further developed. Lord Palmerston saw it, and now his successors see it, and we must hope for a better.

The first, and I consider the most important part of the discovery, is that of the preserving liquid, which my friend Dr. Cregeen and I have found to be peculiarly adapted to all these Indian fibres, whose nature is not like that of Flax or hemp—OILY, but dry and resin-bound; we found that after we removed by the working of our breaking machine, and scutching, scraping and brushing, all the gum or resinous

substance that certain qualities of oils, Cotton seed, Rape seed, Flax seed, Cocoa nut, or Palm oils, with a certain portion of ammonia to convert the oil into a sponaceous liquid with water at a given heat, was sufficient to bring into all those resin-bound fibres, a spinning quality and a softness equal, as you see, to any Flax, and to a lustre equal to Silk. In addition to this advantage, the fibres will take and retain a permanent dye—black in particular—that neither sulphuric acid nor any known test will remove. Velvets and plush have been made in Amiens and Lyons, out of some of the Indian Rheeæ fibre I prepared for the East India Company, which was found to stand up in the pile and so much resemble silk that a French firm has offered to purchase my patents for France and Belgium; and now the sale depends on my success in producing YARNS and VELVETS, in Leeds and Manchester, from my produce, before I return home to London.

The utility and advantage of my application of oil in preparing the resin-bound fibres of India, are further proved by the fact that the canvass and ropes used in Her Majesty's Royal Navy, can be made from them more durable and to bear a much greater strain, (in consequence of the OIL being substituted for the resin or gum, which caused all such resin-bound fibres to cut or break wherever a knot was made) than canvass or ropes which are made from the retted—I would say rotted—hemps of Russia or Italy, all of which are steeped in pools of water for a month, in order that the wood or epidermis may rot, and the fibre released that surrounds it. The late Dr. Royle mentions this in his last publication; he says: "the Indian fibres were proved to be greatly superior in strength to Russian hemp, by the most efficient tests applied to ropes, at Her Majesty's Dock Yards."

With such facts to support my views, I think I am in a position to satisfy all but the enemies of progress and the narrow-minded, who are jealous of rival productions, though I know I

have such parties to encounter, respecting the advantages of the system practically proved by experiments on tons weight of raw material, as I have been employing four Irish scutchers, and from sixteen to twenty women in my factory, and I am enabled to say, that the old system of steeping Hemp and Flax, according to the custom in Great Britain and Ireland, Russia, Belgium and Holland, [*is wrong in principle, and is as contrary to common sense as it is wasteful in practice.* That it is wrong in principle to steep and decompose Flax-straw in water, and expect the decomposition will not *tender* the fibre (which we require and *value* because of its strength) in order to separate the fibres from the woody parts. I now depend upon the proofs that I have with me of plain, unvarnished facts—these are the yarns—No. 30 to 80's lea, prime yarns, spun by Messrs. Hives and Atkinson, from Flax made from green straw, in thirty minutes, Yorkshire Flax, had from that eminent firm known to be the *best spinners of warp yarns in England*, and grown by Mr. John Boyle, who thoroughly understands how Flax should be cultivated to *suit my purpose*. Twenty-one pounds passed through my patent machines, produced in clean, long, green fibre, five and a quarter, and one pound of tow; and this when put through the patent liquid, produced two pounds eleven ounces of long, clean Flax, and half a pound of tow; whilst Mr. Arthur Marshall, of the extensive Flax preparing firm at Patrington, in his reports to the Royal Flax Society, of Belfast, states that in three trials, he can only produce from twenty-one pounds of Flax-straw, one and three-quarter pounds of long scutched Flax. Now, this is not my only instance of producing nearly double the quantity from a given weight of green Flax-straw by my patents, compared to every other system yet discovered; but, as I find there is a party in Leeds reporting unfavourably, it is with pleasure I refer to the noble and highly distinguished individuals whose names I place before you, in all *twenty*, who

were eye-witnesses for hours in my factory of the working of my patent machines, producing similar results, the stuff being weighed before and after dressing, and I may state that those machines (my first patents) were *not so perfect* as those I have lately patented. The other yarns are 30, 35, 40, and 50 lea, spun from Indian Rhee fibre (my patent vegetable silk) first coloured green, blue, black, orange, &c., before being spun—and although spun through hot water, by Messrs. Hives and Atkinson, Messrs. Benyon and Co., Messrs. Briggs and Co., and Messrs. Hill and Son, the colours are scarcely, if at all changed, and the strength far exceeds that of Flax-yarns of the same number. The Aloe, Rhee, and Pine-apple fibre is to be had at £15, £18, and £21, in London and Liverpool.

That it is contrary to common sense to so decompose Flax-straw, and dye the fibre dark, which must be made (and is naturally) white, is equally apparent, inasmuch as by the decomposition of the wood or stalk, the green fibre, as it softens, extracts and absorbs the dark slate-coloured matter out of the stalks or wood; and as the wood rots into dust, the dust *sticks fast like glue* to the green, *gummy fibre*, so that, when the stalks are dried neither breaking, scutching, nor even hackling, will remove this *worse than useless* and expensive dye—a dipping in sulphuric acid must be commenced or resorted to before the weaver can work it into cloth, and then it is only brown cloth. Again, the additional expense of 2d. per yard must be incurred in the bleaching, thus adding at least 3d. per yard to an article that only costs on an average 9d. before it is made into a marketable state. Now, as I take my five and a quarter pounds of green Flax, and wash it out *white* in thirty minutes, producing two pounds eleven ounces, in place of the one and three-quarter pounds of *dark slate colour*, produced from the same weight of straw by Messrs. Marshall and Co., I must allow those who hear my statement to draw their own conclusions from the facts, and from the respecta-

bility of the witnesses I have produced, who were present when the work was performed.

That it is wasteful in practice to so steep Flax or Hemp, I think I have proved, by a comparison of the produce by the old system and mine.

1st. Loss by weight.

2nd. Loss by giving colour that must be removed.

3rd. Loss by having to bleach in place of wash.

The above are facts that cannot be gainsaid, whilst linen made from Flax prepared by my system would not require the yarns being boiled, for mill-washing at three farthings per yard would finish linens for the market.

Having previously described my method of preparing Indian fibres, Flax and Hemp, with the advantages obtained over every other system yet discovered, allow me to call attention to our increasing consumption of continental Hemp and Flax. Our annual reports being from £8,000,000 to £9,000,000 sterling in value, the wonder is that our merchants will allow the valuable productions of India to remain so long comparatively unknown, whilst the slave-grown cotton of America cannot be had to meet the spinning requirements of Lancashire, and applications are being made to Her Majesty's government to encourage its cultivation in India and Africa,—the fibres I allude to can be had *without cultivation*, and how far their growth might be extended and improved it is impossible to say. Most of us, however, have had some experience of the disfavour with which discoveries are at first received, and the apparent disadvantages under which they are launched, as well as of the small, insignificant circumstances from which the greatest results have arisen.

I humbly submit to the antiquated "let well alone," system of preparing Flax and Hemp, which in its rude origin so strongly contrasts with the scientific advances in respect to our own agricultural productions, hand labour being now so much

superseded by machinery, that it is incompatible with the times in which No. 60 lea yarns are selling at 5s. 6d. per bundle, which fifteen years ago realised 10s. per bundle, although Flax is now as high as it was then. Not only is additional raw material wanted to meet the demand, but the improvements in the mode of preparing to create that addition to our raw material is absolutely necessary to further the object. My observations are not those of a mere theorist—my whole life has been devoted (the last twelve years in particular) to the trade, and if my discovery and inventions, applied to increase the resources in fibrous productions meet with the approbation which I think they merit, I will freely place my patents and my time in the hands of a company of spinners and merchants, for the mutual benefit of all who may join in working them.

The president, Mr. Lupton, having understood from Mr. Dickson that his visit to Leeds was with the view of having his Indian productions spun and woven (as they have been done in Amiens and Lyons, into VELVETS and PLUSH, as they stand up in the pile and are more like silk than any other material) desired to have a supply of Rheeia fibre that he might have them spun and woven; and another gentleman present, Mr. Martin, had a portion of Mr. Dickson's PINE APPLE fibre, with a view to its being spun and woven. It was then proposed and seconded by the gentlemen present that a vote of thanks should be awarded to Mr. Dickson for his explanation on a matter of such importance to the manufacturing interest.

The compliment was acknowledged by Mr. Dickson with thanks.

After having the quality of the yarns tested by weaving into *plain cloth*, *drills*, *ship's canvas*, and *diaper*, I had the wool or the shorts of the Indian fibres, *scribbled as wool*, and mixed and spun *with wool*, into yarns; and as those Indian fibres are much of the nature of sheep's wool, and will shrink like

woollen cloth, there cannot be a doubt of their felting qualities ; and as our mode of dying *permanent black* must make such fibres help considerably to supply the want now felt for raw material in LEEDS, DUNDEE, and BELFAST ; the following will show the necessity for a supply of new material :—

INDIAN FIBRE.

“ We have been favoured by the chairman of the Chamber of Commerce with a copy of the following correspondence, containing the reply of the council of India to the memorial from the Chamber relative to the growth of Flax in India. If those connected with the linen trade in Dundee, Belfast, and Leeds, were to join in forming a Flax Supply Association, we believe it would be of more service than any appeal to Parliament on the subject, as there is little doubt Parliament would abide by Lord Stanley’s decision. The chief service that Government could render at present, would be in publishing in the Government organs in India the memorial of the Dundee Chamber :—

“ Baldovan House, Dundee, 18th Oct., 1858.

“ MY LORD,—I have been requested by the Chamber of Commerce, of Dundee, to forward to your lordship the memorial and the printed report of a meeting on the subject of procuring a supply of Flax from India, which accompany this letter.

“ In transmitting these documents to your lordship, I beg to remark that it has for a long time been obvious to those engaged in the linen trade of this country that the sources from whence the raw material is at present derived will, in future, prove altogether inadequate to the demand of this rapidly increasing branch of industry, and that, therefore, the question of how an increased supply of Flax is to be obtained, has naturally forced itself upon the attention of those most directly interested.

“The result of these inquiries has been to imbue them with a strong conviction that it is from our Indian empire that this supply is to be procured. Should their expectations be realised, the benefit to this country would be very great; but the advantage to India itself would also be very considerable, owing to the profitable employment which the cultivation of Flax would afford to the native population.

“As a proof of the magnitude of the linen trade, I may mention that the sum annually paid by this country for Flax, to Russia alone, amounts to fully £3,000,000.

“As Dundee is the chief seat of the linen trade of this part of the kingdom, I need hardly urge upon your lordship the vital importance of this question to the memorialists, and to my constituents generally.

“I feel sure that it will receive from the Council for the Government of India and from yourself, the attention which its gravity demands, and that, every information which the public records of India can furnish, and any assistance which your Board can afford will at once be given.

“I have, etc.,

(Signed) “JOHN OGILVY, Bart.,
M.P. for Dundee.

“The Rt. Hon. Lord Stanley, M.P.,
President of the Council for the
Government of India.”

“East India House, 6th Nov., 1858.

“SIR,—I am directed by the Secretary of State for India in Council to acknowledge the receipt of your letter of the 18th ult. Lord Stanley fully appreciates the great importance of the object which the memorialists have in view, and is most anxious that no means to that end should be wanting which are within the proper province of Government. The capability of various parts of India to produce Flax of good quality

having been proved by actual experiment, Lord Stanley apprehends that its introduction into this country, in large quantities, can only be looked for as the result of a well organised system of private enterprise, which must be brought to bear directly on the cultivators of that article in India.

“I have, etc.,

“COSMO MELLVILL.

“John Ogilvy, Bart., M.P.”

PART III.

The mechanical process of Hackling and Spinning Flax, fully explained—A CORRECT SCALE, showing the first cost of Flax and description of the numbers up to which each quality is calculated to be spun—Instructions in the art of manufacturing all kinds of Linen Goods from Flax and Tow Yarns, as practised by the Author, in Ireland, for *ten years*, employing 2,000 Weavers—TABLES OF CALCULATIONS directing parties respecting the use of certain numbers of yarns, and the quantity required for Warp and Weft for a piece of each sort—Method of counting the Warp and Weft in each piece fully set out on an *unerring principle*—Observations on the advantages of the above—A series of Letters published in the *Gardener's Chronicle*, *Agricultural Gazette*, and provincial Journals, in 1845, 1846 and from 1854 to 1864, proving by some dozens of experiments that from £20 to £30 per acre has been frequently made by a proper method of cultivating and preparing Flax.

MECHANICAL PROCESS OF HACKLING AND SPINNING FLAX AND TOW YARNS IN FACTORIES.

FLAX when cut (as fine quality often has to be, especially to spin into fine numbers) differs very little (before the fibre is separated from the stem or wood) in appearance from strong coarse force grass. After being separated from the stem, as directed, it changes hands from the farmer to the spinner, whose judgment enables him to assort it according to the qualities or fineness of the fibre, and prepare it for the first process to which it is subject previous to spinning.

A Flax-spinning mill, with the stores necessary for holding a sufficient supply of Flax should be so constructed that when the rough Flax has been stored, every move it gets afterwards

should bring it a stage forward towards spinning ; therefore, I shall consider the Flax in the store, and ready to be handed to *the next room* ; the hand-hackler, who stands opposite a low bench on which his hackles are screwed, having taken a handful of the rough Flax, throws about two-thirds of it over the top of the hackle, and through this instrument, which is composed of three or four dozens of *fine steel teeth*, the Flax is drawn *rather quickly* ; he repeats the process several times, and after turning his hand so as to clear out all the shorts (called tow) over this *coarse hackle*, and changing the part he first held in his hand, by holding what he had cleaned, until he cleans the other end of the handful or “*streik*” (as it is called), he then hands it to another, who is more skilled in working Flax on the *finer tools*, as they are called, and he, after putting it through perhaps two sets of hackles, leaves it ready for the sorting room. Another mode of preparation is by the hackling machine, which I shall describe as a cylindrical revolving implement with a number of hackles. This machine is used for *cut Flax*, or rather I should say *broken Flax*, about five or six inches long. Boys generally attend to the feeding of this machine by holders made of iron, in which they place a handful of Flax, and after using a hand-vice to this holder, to screw the Flax so tight that it will not draw out by the hackles, they place the holder on the wheel which revolves and draws the flowing Flax through the fine hackle-teeth until all the tow is cleaned out. This process is attended to by changing the Flax in the holder until both ends are dressed, and then it is carried to the sorting room, there to be selected, according to the numbers to which it will spin FOR WARP OR WEFT. The short fibre, or tow, as it is named, undergoes a similar process, and can be spun into very level yarns for *weft purposes*.

Hackling is a very dusty operation, and the only unpleasant part of the business, as many particles of the Flax fly about,

and it requires some care on the part of those attending the machines, when collecting the tow from those sharp-toothed implements. The tow hackled from the finer Flax is prepared for spinning by a carding machine similar to that used in the cotton manufacture, and in order to counteract the dust nuisance, I find it has been recommended to enclose each carding engine in a separate stall.

The Flax being sorted, is next carried to the spreading or drawing frames, when the young operatives attend to the feeding of those machines; this operation answers the same end as that to which the hand-spinners in olden times had to attend with care, when “the ball and distaff arrangement by Arachne excited the wonder of the nymphs.” In the simple process of spreading the Flax passing from this to the roving frames, the process continues in drawing out the slivers, which are delivered into cylindrical boxes until wound on bobbins or spools, ready for the spinning frame.

I might here enter into a minute description of these frames, but I consider such would be superfluous, as every day alterations and improvements are made by the suggestions of the practical men who attend those machines. Flax is spun from the roving similar to that of long combed wool; but it is requisite that the Flax rovings pass through hot water, which is supplied in covered troughs, on their way between the delivering bobbins and the spindles—a dew or spray is continually thrown off by the yarns, as it is rapidly turned and taken in by the fliers of the spindles; however, in a well planned mill there is little inconvenience or wet to be seen.

Having briefly explained the spinning process, it is unnecessary to do more than to say that the Flax is continually attenuated, by being passed through the different machines mentioned, until a roving is made perfectly even, after which it receives the torsion or twist that makes it into yarn. Before

the invention of spinning by machinery, the process of attenuation was effected by the finger and thumb of the spinner, hence arose the great superiority of the Hindoos, especially in the fine fabric, who, it is said, possess a delicacy of touch beyond that of any other nation, which apparently compensates for their want of physical strength.

When we take into consideration the number of processes that Flax has to undergo before it is twisted into yarns, it will be seen that it would be utterly impossible to carry on the work of spinning, hackling, sorting, &c., in any other way but in a large mill or factory, as the succession would be exposed to serious injury if it were necessary to transport them to any considerable distance, to say nothing of the temptation to which the operatives would be exposed, and to which they notoriously yielded when spinning was a domestic operation. It is also to be remembered that the fatiguing part of all the process is performed by power; the machinery is the servant and assistant of the operative; it performs the toilsome part of the labour; it saves every expenditure of muscular power and mental energy, requiring from the operative nothing but careful superintendence, and as there exist very erroneous impressions respecting the hardships of factory labour, I would recommend the reader, or those interested, to visit the Flax-mills of Messrs. Hives and Atkinson, of Leeds; of Messrs. Renshaw and Co., of Manchester; or of Messrs. German, Petty, and Co., of Preston, and as those are the most extensive Flax-mills in *the three busy towns* named, they will see that there is nothing to complain of, not even the length of hours that the younger portion of the operatives are subject to.

Now, in conclusion, I beg to remark, as I have often found the Flax-spinners in error of judgment respecting the quality of their yarns that there is but one way to know *warp yarns from weft*, and but one way to produce what will please

manufacturers. It is not because a spinner has paid £80 or £100 per ton for Flax, that it must make 80s. or 90s. lea warp of prime quality; it is not because it has turned out from the hackle silk-like in appearance, oily and fine, that it can be run up to 80 or 90 lea, and worth 7s. 6d. or 8s. 6d. as a warp article: *quality* I am aware is requisite; but we must have strength of fibre to make *warp yarn*. I know it is difficult to spin good clean warp yarn; why is it so?—I will answer—We generally want yarns *clean and free* from what is termed by the manufacturers, ‘NEAP’ on the thread, which we see at once by shaking out a hank opposite a window and looking through it; but we seldom find it clear and free of this defect and also strong. If we find it clear and free from fault, we generally find the yarn silk-like, the Flax being oily and KINDLY, as it is termed. Such is easily hackled, and as a consequence the shorts bring with them *all the particles* that remain on *a more husky* fibre; for example, I will state what I know of this, *from years of experience*. I never found yarns above 60 lea from any but white French Flax, that would make *prime strong warp*; and I never found it quite clear, and free from the neap I mentioned. It is always, *when strong*, difficult to hackle or clean out, although it appears oily. The warp yarn undergoes all the working of the machinery, *and stress of weaving and dressing*, in which operation the weaver can clear off *slubs* or defects in the yarns, when stretched out by the yarn beam of the loom being drawn back, while the weft yarn only bears the swing of the shuttle from one end of the slays to the other,—say one and a half yard. It is driven into its place in the warp without any *stress*, therefore strength in the weft is not such a matter of consequence. To be *clean, level, and round*, is what I call perfection. The same is required in *warp yarns*; but it is difficult to make it so, and have what is of *more importance, strength* in the thread.

A CORRECT SCALE SHOWING THE FIRST COST OF FLAX.

WITH THE DESCRIPTION AND NUMBERS THAT EACH QUALITY IS
CALCULATED TO BE SPUN TO BY FLAX SPINNERS
IN FACTORIES.

In order that the reader may have a correct idea of the value of the article after being handled by him and ready for market, I shall here give a calculation of it, according as the fibre is suited for spinning into the different numbers, from the coarser to the finer sorts, or numbers suited to be manufactured into coarse and fine qualities of linen and cambric; and those who take the trouble to examine the following table will see that the spinners are much better paid for the yarns spun from *the finer qualities* than those of the coarse. Thus they must feel satisfied that their attention, if they wish to cultivate Flax, should be directed (like the French and Belgians) to the growing of the *FINER FIBRE*; and as I always found that when I had a *fine quality* of Flax, I had the greater weight per acre, because of its having been a *close, thick crop*, it is but proper to notice that where a crop of Flax *turns out light on the ground*, it will be of *coarse quality*, and along with that, the weight per acre will be frequently not more than one half of what I know to have been gotten when the crop turned out fine; therefore, as there is a wide difference between the value of *coarse* and *fine* quality of Flax, the prices running from £40 to £170 per ton, it is evident that there is no article produced that offers such advantages to the farmer.

Price of Flax per ton calculated at price per stone of 14 lbs. in the rough undressed state, as sold by farmers.		Produce from one stone of 14 lbs. when dressed.		Price per lb. when dressed and ready for spinning.		The number of Flax from £40 to £170 per ton can be spun to.		Weight of Flax it requires to spin one bundle Yarns.		Price of Flax in one bundle Yarns.		Cost of spinning with interest on cost of machinery.		First cost of one bundle of yarns from 22 to 180 Lea.		Yarns made from such Flax are suited for warp and weft, and sold as under.			
per ton.	£	per stone.	lb.	s.	d.	No.	lb.	s.	d.	s.	d.	s.	d.	s.	d.	No. 1 Line	Warp for strong drill or linen.	Weft for light drill or linen.	Tow.
40	is about 5	0	10	6	6½	22	10	5	0	2	2	2	2	7	2	10	7	9	6
44	"	5	"	6	7	25	9	4	10½	2	2	2	2	7	0½	9	9	6	3
48	"	6	"	7	7½	30	7½	4	4½	2	1	2	1	6	5½	9	7	5	0
52	"	6	"	7	8	35	6½	3	10½	2	1	2	1	6	11½	8	7	6	0
56	"	7	"	8	8½	40	5½	3	10½	2	0	2	0	5	10½	8	7	3	3
60	"	7	"	9	9	45	5	3	9	2	0	2	0	5	9	7	6	5	3
64	"	8	"	9½	9½	50	4½	3	6½	2	0	2	0	5	6½	7	6	5	6
68	"	8	"	10½	10½	55	4	3	5	2	0	2	0	5	5	7	6	5	6
72	"	9	"	10½	10½	60	3¾	3	4	2	0	2	0	5	4	7	6	5	6
76	"	9	"	11½	11½	65	3¾	3	3	2	0	2	0	5	3	7	6	5	6
80	"	10	"	11½	11½	70	3¾	3	7	2	0	2	0	5	3	8	0	5	6
84	"	10	"	12	12	75	3	3	6	2	0	2	0	5	6	8	3	5	6
88	"	11	"	12½	12½	80	2¾	3	4	2	0	2	0	5	4	8	3	5	6
92	"	11	"	13½	13½	85	2¾	3	0½	2	0	2	0	5	0½	8	6	5	9
96	"	12	"	14	14	90	2¾	3	4	2	1	2	1	5	4	8	9	5	9
100	"	12	"	16½	16½	95	2¾	3	5½	2	2	2	2	5	7½	9	0	5	0
104	"	13	"	17½	17½	100	2½	3	7½	2	3	2	3	5	10½	9	3	5	6
112	"	14	"	19	19	110	2	3	6	2	3	2	3	5	9	9	9	7	9
120	"	15	"	21	21	120	1¾	3	8½	2	3	2	3	5	11½	10	6	6	3
128	"	16	"	22	22	130	1¾	3	11½	2	3	2	3	6	12½	11	6	6	9
136	"	17	"	23	23	140	1¾	3	7¾	2	4	2	4	5	11½	12	9	7	3
144	"	18	"	3	3	150	1¾	4	6	2	4	2	4	4	10	14	0	8	6
152	"	19	"	3	3	160	1¾	3	11½	2	6	2	6	4	5½	15	0	9	5
160	"	20	"	4	4	170	1¾	5	0	2	8	2	8	5	8	13	0	10	0
170	"	21	"	4	4	180	1	4	2½	3	0	3	0	7	2½	13	0	13	0

The Flax from £40 to £80 per ton is in general Irish, and the best warp yarns, No. 1 Line (Numbers from 70 Lea upwards) are always made from the best Flemish or French Flax, No. 2 Line can be spun from Irish Flax.

In calculating the number of pounds of dressed or hackled Flax required to make one bundle of line or Flax yarns, from No. 22 lea up to 180 lea, it must be observed that I show but from ten pounds to five pounds of clear or dressed Flax from fourteen pounds of rough undressed Flax; and that as Flax is required to spin fine, it undergoes the process of being drawn oftener over the *finer hackles*, and as a consequence, the more tow and *less* Flax becomes produced. I have, therefore, thought proper to notice the drawings or tow, as it is called.

By the late improvements in machinery this tow can be spun into yarns nearly *as fine* in quality *as the Flax*, and the waste is now very trifling. Tow being the shorts from the Flax fibre, it is more like (in nature) Cotton than Flax, and therefore the yarn from it, although it can be spun *level* and *round*, is not strong. It is only adapted for weft or drills, diapers, coarse and light cheap linens, however, it can be spun to great perfection, and although the prices of linen yarns are much below the prices in 1834, the spinner's profits are not so much reduced as might at first sight appear, from their being able, by improvements in machinery, to take more yarn from the tow than it was possible for them to do *ten years ago*, and therefore they have less loss by waste from the original weight of the rough material.

I look upon these improvements in machinery and reduction in prices as a permanent benefit to Flax-spinners, as well as to those who manufacture and wear our linen goods, inasmuch as the prices are now so low that the article competes with cotton, and as a consequence, our home consumption increases as well as our exportation, which continues to improve.

The quantity of Flax required in the spinning of one bundle of yarns containing sixteen hanks and eight cuts, appears in the table, and as the amount I have placed opposite each quality will be found to be the prices of the day, the

calculating farmer will see HOW IT IS that fine shirting linens have been so exorbitant in price up to 1834, when Flax culture began to be spread over the northern province of Ireland, and when our English spinners were entirely depending on the *French, Belgian, Dutch, and Russian farmers* for the raw material, and therefore paying prices for the article that our farmers would scarcely credit. I have seen Flax in 1834 at £150, £160, and up to £180 per ton, and I have paid 18s. per bundle of sixteen hanks and eight cuts, for the yarns spun from ONE POUND AND A QUARTER OF SUCH FLAX. Now, as from one pound and a quarter of that Flax which cost 3s. 11d., the spinner could produce his bundle of yarns and obtain 18s., should not our farmers be thankful to be made aware of the advantage they may derive in producing from their farms so valuable an article? Certainly the prices of yarn are now much reduced by spinners, and Flax has come down in price; but I maintain that fine Flax will always command a *ready sale* and a good price.

Having now placed before my readers facts sufficient to convince them that they are certain to be paid for any extra care and attention bestowed on the cultivation of this plant, I shall conclude this part of my observations by giving particulars of the present expenses of manufacturing the article (when spun) into *linen shirtings, linen-drills, etc.*,—articles that our labouring population should wear *in preference to cotton*, as linen-drill (formerly called Russian duck) makes excellent trouser stuff and working jackets, which are very cheap and will wear for a considerable time, and no dress can be better adapted for *spring, summer, and harvest wear*.

I shall first give the description and quantity of yarns used for making linen-drills, with the expenses of manufacturing; for example :—

YARNS REQUIRED TO MAKE A DRILL WEB.

Quality or Beer.	Number of Hanks.	Number of Warp.	Number of Weft.	Cost of manufacturing a linen drill, containing 84 to 85 yarns.		
40	42 40	25	22	4½ per hank	£	s. d.
				4¾ do.	0	15 9
				Boiling	0	15 10
				Warping and Winding	0	1 9
				Weaving	0	1 2
	82				0	6 6
					£2	1 0
70	72 51	40	30	82 hanks will make 84 to 85 yards of strong twilled linen drill at 5¾d.		
				4½ per hank	1	7 0
				4¾ do.	0	18 0¾
				Boiling	0	2 7¼
				Warping and Winding	0	1 7
	123			Weaving	0	9 6
					£2	18 9
100	102 60	70	60	123 hanks will make 84 to 85 yards of strong twilled linen drill at 8½d.		
				5 per hank	2	2 6
				3¾ do.	0	18 9
				Boiling	0	3 5
				Warping and Winding	0	2 1
	162			Weaving	0	14 0
					£4	0 9
				162 hanks will make 84 to 85 yards of strong drill 11½d. cost.		

Although I select 40, 70, and 100 beer drill, in order to show the first cost of this very USEFUL ARTICLE of our manufacture, I beg to say that the degrees or qualities rise by fives, as follow, and the prices are fixed as under.

Beer	40.	45.	50.	55.	60.	65.	70.	75.	80.	85.
Price	5¾d.	6d.	6½d.	7d.	7½d.	8d.	8½d.	9d.	9½d.	10d.
Beer	90.	95.	100.	105.	110.	115.	120.			
Price	10½d.	11d.	11½d.	12¼d.	13d.	13¾d.	14½d.			

Thus it appears, according to the prices of yarns and the expense of weaving, that a good coarse linen drill can be made at 5¾d. per yard, and middle quality at 8½d. per yard, and very fine at 14½d. per yard; 2½ yards will make a labouring man a pair of trowsers, and 4¼ yards will make him a blouse or

coat; and thus he can have the materials for making those necessary articles of clothing from home production: coat, middle quality, for 3s. 1d., and trowsers 1s. 5d., total 4s. 6d. And as health is the only capital that the farm-labourer has to depend upon, a couple of suits of such clothing would enable him TO BE ALWAYS CLEAN, and as a consequence, in better health and more able to do his work.

As it is my wish to submit matter likely to interest and benefit the farmers and agricultural labourers, I shall here add a rule *for calculating and counting* A LINEN DRILL, which I DEFY being *found in error*, as the same has been *my guide* FOR MANY YEARS, when I had from 1,500 to 2,000 weavers employed in the manufacture of this article; and as merchants and shippers are OFTEN DECEIVED *in the purchase of this article* from parties calling and selling them for beers, or sets of a much finer quality than *they will count*, I beg to say that with a proper linen glass and a reference to the following table, they cannot be taken advantage of when they count *the warp and weft*.

CALCULATION TO MAKE A LINEN-DRILL WEB OF
84 OR 85 YARDS.

Beer.	Warp.		Weft.		Warp should count.	Weft should count.
	Hanks.	Number.	Hanks.	Number.		
						Shots.
40	42	25	40	22	12	10
45	47	28	42	25	13	11
50	52	30	44	25	14	12
55	57	30	46	28	15	12 $\frac{3}{4}$
60	62	35	48	28	16	13
65	67	35	49	28	17	13 $\frac{1}{2}$
70	72	40	51	30	18	14
75	75	45	52	35	19	14 $\frac{1}{2}$
80	82	50	54	40	20	15
85	87	55	56	45	22	15 $\frac{1}{2}$
90	92	60	58	50	24	16
95	97	65	60	55	25	16 $\frac{1}{2}$
100	102	70	62	60	26	17
105	107	75	64	65	27	17 $\frac{1}{2}$
110	112	80	67	70	28	18
115	117	85	70	75	29	18 $\frac{1}{2}$
120	122	90	76	80	30	19

METHOD OF COUNTING WARP AND WEFT IN A LINEN DRILL WEB.

Example.—As the warp appears on the right side of a drill-web, take a piece, say 100 beer, which observe in the above table is made from 102 hanks of 70 lea warp, and 62 hanks and 60 lea weft; place your counting glass on the twill or face of the web, and you should be able to count twenty-six threads *in pairs*, one partially lapped over the other. If you cannot make out twenty-six threads under a correct linen glass it is not 100 beer, and as a consequence it has not 102 hanks of warp, and must be of less value than 100 beer. In counting the weft you turn the piece and place your glass on the back, or what is termed the *wrong side*, and if it has been wefted with 60 lea yarns, and sixty-two hanks have been driven on the warp, *the twill on the face will be short and close, the web thick*, and you should be able to count under the glass seventeen *shots of weft*, if less the weaver must not have driven on sixty-two hanks.

Having stated the number of yarns necessary to make outer clothing from linen-drill suited to wear in hot climates, or in warm weather at home, I shall conclude my observations on this part of the subject by giving the exact expenses attending the manufacture of a still more important article than that mentioned, inasmuch as we have other articles of outside dress at a moderate price, which we might use instead of an article made from Flax; however, as we all know the comforts of a GOOD CLEAN LINEN shirt, I shall give particulars as to the proper method of getting up a fifty-two yards piece of linen, and as the majority of the people who wear linen shirts are not likely to purchase yard-wide linen for that purpose below $12\frac{3}{4}$ d. per yard (and for that price they should have what we call *fourteen hundred*, marked

and known by 14⁰⁰, allowing twopence per yard for bleaching) I beg of the reader to observe the price of the Flax from which the yarns require to be spun, and from which those goods are made; and let him not forget that in growing Flax that will bring £72 per ton, the farmer has not only a clear profit of £21 per acre, but he prevents MILLIONS OF GOLD, which would give *extensive employment to our agricultural population*, from being *annually exported to the continent*; and as there is nothing to prevent the inhabitants in every rural district or county in England and Ireland from growing and manufacturing the linen articles required for family uses, just as the small farming population in the North of Ireland do, and which has added much to their *prosperity and comfort*, I do hope that, if the facts herein explained (showing what additional employment the cultivation of Flax will give to the agricultural classes) will not stir up a feeling in the minds of the farmers of Britain to try experiments that the temptations of extra profit must induce them to bestir themselves; moreover it appears to me that the manufacturers have carried out their wishes for open ports and a free trade in corn, farmers should not only *be up and doing*, but glad of being made aware that they can cultivate an article sufficient to meet the payment of the CHIEF DEMAND—THE RENT—regardless of CORN-LAWS OR PROTECTING-DUTIES.

As the buyers of shirting, or what is called 4-4ths linen, cannot be aware of the manufacturer's terms for the various qualities called *sets*, I shall first give the present list of prices in the white, or bleached state.

Quality 4-4ths	9 ⁰⁰	10 ⁰⁰	11 ⁰⁰	12 ⁰⁰	13 ⁰⁰	14 ⁰⁰	15 ⁰⁰	16 ⁰⁰
Price	8½d.	10d.	10¾d.	11½d.	12¼d.	12¾d.	13¼d.	14½d.
Quality 4-4ths	17 ⁰⁰	18 ⁰⁰	19 ⁰⁰	20 ⁰⁰	21 ⁰⁰	22 ⁰⁰	23 ⁰⁰	24 ⁰⁰
Price	15¼d.	16½d.	18d.	20¼d.	22d.	24d.	26d.	32d.

The above being the price in the bleached state, in 1845, in

order that persons, unacquainted with the first cost of the article, may form a correct idea of the value hereafter, I shall give the expense attending the manufacture of a few sets in the *brown state*. The prices now, in 1858, I understand are down 3d. per yard, and therefore linen is now very near as cheap as cotton, although a linen shirt will outwear two cotton shirts.

**CALCULATION OF YARNS REQUIRED TO MAKE A STRONG
LINEN WEB FIFTY-TWO YARDS LONG.**

Quality or set	Quantity of Hanks.	Number of Warp.	Number of Weft.	Price of Yarns, Weaving, etc.		
9 ⁰⁰	30	22	30	At 4½d. per hank ...	£	s. d.
	32			4½d. do. ...	0	11 4½
				Boiling ...	0	12 1½
				Warping and Winding ...	0	1 3
				Weaving ...	0	0 10½
	62				0	7 0
					£1	12 7½
				62 hanks will make 52 yards linen, at 7½d. per yard.		
14 ⁰⁰	46½	40	60	At 4½d. per hank ...	0	17 6
	48			3¾d. do. ...	0	15 0
				Boiling ...	0	1 11½
				Warping and Winding ...	0	1 2½
				Weaving ...	0	11 0
	94½				£2	6 8
				94½ hanks will make 52 yards linen, at 10¾d. per yard.		
20 ⁰⁰	66½	70	95	At 5½d. per hank ...	1	10 3
	68			4½d. do. ...	1	4 1
				Boiling ...	0	2 9
				Warping and Winding ...	0	1 10
				Weaving ...	1	0 0
	134½				£3	18 11
				134½ hanks will make 52 yards linen, at 6½d. per yard.		

As the above only shews the numbers required to make three sets, or descriptions of 4-4ths shirtings, I shall now add the scale, by which all kinds, from 9⁰⁰ to 28⁰⁰, can be made.

YARNS

CALCULATED TO MAKE A FIFTY-TWO YARD PIECE OF
STRONG FOUR-FOURTHS LINEN.

Quality or Set.	Hanks.	Warp No.	Hanks.	Weft No.
9 ⁰⁰	30	22	32	30
10 ⁰⁰	30	25	34	35
11 ⁰⁰	32 $\frac{1}{2}$	28	38	40
12 ⁰⁰	36 $\frac{1}{2}$	30	42	45
13 ⁰⁰	40	35	45	50
14 ⁰⁰	43 $\frac{1}{3}$	40	48	55
15 ⁰⁰	46 $\frac{1}{2}$	45	52	60
16 ⁰⁰	50	50	55	65
17 ⁰⁰	53 $\frac{1}{3}$	55	58	70
18 ⁰⁰	60	60	62	75
19 ⁰⁰	63 $\frac{1}{3}$	65	65	80
20 ⁰⁰	66 $\frac{1}{2}$	70	68	85
21 ⁰⁰	70	75	72	90
22 ⁰⁰	73 $\frac{1}{2}$	80	75	100
23 ⁰⁰	76 $\frac{1}{2}$	90	78	110
24 ⁰⁰	80	100	82	120
25 ⁰⁰	83 $\frac{1}{3}$	110	85	130
26 ⁰⁰	86 $\frac{1}{2}$	120	88	150
27 ⁰⁰	90	140	92	170
28 ⁰⁰	93 $\frac{1}{3}$	180	96	180

The same numbers will make 7-8th linens; but the calculation as to the quantity required is less because of the breadth.

Quality or set.	Hanks.	Warp No.	Hanks.	Weft No.
9 ⁰⁰	24	22	26	30
10 ⁰⁰	26 $\frac{1}{2}$	25	28	35
11 ⁰⁰	29 $\frac{1}{3}$	28	31	40
12 ⁰⁰	32	30	34	50
13 ⁰⁰	35 $\frac{1}{2}$	35	37	55
14 ⁰⁰	37 $\frac{1}{3}$	40	49	60
15 ⁰⁰	40	45	42	65
16 ⁰⁰	42 $\frac{1}{2}$	50	44	70
17 ⁰⁰	45 $\frac{1}{3}$	55	47	75
18 ⁰⁰	48	60	50	80
19 ⁰⁰	50 $\frac{1}{2}$	65	52	85
20 ⁰⁰	53 $\frac{1}{3}$	70	55	90
21 ⁰⁰	56	75	58	95
22 ⁰⁰	58 $\frac{1}{2}$	80	60	100

Another description of linen called three-fourths wide is used for different purposes, and generally finished for what are termed brown and black-beetled goods, is made by the following scale.

YARNS CALCULATED TO MAKE FIFTY-TWO YARDS
OF THREE-FOURTHS WIDE LINEN.

Quality or set.	Hanks.	Number of Warp.	Hanks.	Number of Weft.
4 ⁰⁰	7	4	9	8
5 ⁰⁰	11	8	13	12
6 ⁰⁰	14	12	16	18
7 ⁰⁰	16	14	19	22
8 ⁰⁰	18½	18	22	25
9 ⁰⁰	21	22	25	30
10 ⁰⁰	22½	25	26	35
11 ⁰⁰	25	28	29	40
12 ⁰⁰	28	30	32	45
13 ⁰⁰	32	35	34	50
14 ⁰⁰	32½	40	36	55

Four-fourths light linens made for exportation. These goods are made from a much finer description of yarns.

YARNS CALCULATED TO MAKE FIFTY-TWO YARDS
OF FOUR-FOURTHS LIGHT LINEN.

Quality or set.	Hanks.	Number of Warp.	Hanks.	Number of Weft.
8 ⁰⁰	27	30	29	40
9 ⁰⁰	30	35	32	45
10 ⁰⁰	33	40	35	50
11 ⁰⁰	36½	45	38	55
12 ⁰⁰	40	50	42	60
13 ⁰⁰	43½	55	45	65
14 ⁰⁰	46½	60	48	70
15 ⁰⁰	50	65	52	75
16 ⁰⁰	53½	70	55	80
17 ⁰⁰	56½	75	58	85
18 ⁰⁰	60	80	62	90
19 ⁰⁰	63½	85	65	95
20 ⁰⁰	66½	90	68	105
21 ⁰⁰	70	100	72	120
22 ⁰⁰	73½	110	75	140
23 ⁰⁰	76½	120	78	160
24 ⁰⁰	80	140	82	180
25 ⁰⁰	83	160	85	200

As merchants and shippers can judge of the value of linens offered them by bleachers only by a comparison of the prices and quality of goods placed before them, it may be interesting and useful to them to know the *exact expenses incurred* in the manufacture of the article, and as the prices of light four-fourths export linens are now in the bleached state as follows :

Set or Quality	8 ⁰⁰	9 ⁰⁰	10 ⁰⁰	11 ⁰⁰	12 ⁰⁰	13 ⁰⁰	14 ⁰⁰	15 ⁰⁰	16 ⁰⁰
Price.....	/8	/8½	/9	/9½	/10	/10¾	/11½	1/	1/¾
Set or Quality	17 ⁰⁰	18 ⁰⁰	19 ⁰⁰	20 ⁰⁰	21 ⁰⁰	22 ⁰⁰	23 ⁰⁰	24 ⁰⁰	25 ⁰⁰
Price.....	1/2	1/3½	1/6	1/8½	2/2	2/7	2/11	3/2	4/0

I shall now add to this the first cost prices, in the brown state, with the description as to quantity and numbers used in making such goods.

**YARNS REQUIRED TO MAKE A FIFTY-TWO YARDS
PIECE OF LIGHT LINEN GOODS.**

Quality or Set.	Quantity of Hanks.	Number of Warp.	Number of Weft.	Prices of Yarns, Weaving, etc.			
8 ⁰⁰	27	30	40	At 4½d. per hank	...	£	s. d.
	29			3¾ do.	...	0 9 6½	
				Boiling	...	0 9 0	
				Warping and Winding	...	0 1 2	
				Weaving	...	0 0 9	
				56 hanks will make 52 yards cost 6d. per yard.	}	1 5 5½	
14 ⁰⁰	46½	60	70	At 4d. per hank...	...	0 15 6	
	48			2¾d. do.	...	0 15 0	
				Boiling	...	0 1 11	
				Warping and Winding	...	0 1 2	
				Weaving	...	0 7 0	
				94½ hanks will make 52 yards cost 9¼d. per yard.	}	2 0 7	
20 ⁰⁰	66½	90	105	At 6d. per yard...	...	1 13 3	
	68			5½d. do.	...	1 5 6	
				Boiling	...	0 2 9	
				Warping and Winding	...	0 2 2	
				Weaving	...	0 18 0	
				134½ hks. will make 52 yds. cost 1s. 6½d. per yard.	}	4 1 8	
25 ⁰⁰	83	160	200	At 11d. per hank	...	3 16 1	
	85			12d. do	...	4 5 0	
				Boiling	...	0 3 6	
				Warping and Winding	...	0 2 4	
				Weaving	...	1 15 0	
				168 hks. will make 52 yds. cost 3s. 10½d. per yard.	}	10 1 11	
	168						

The next description of light linen goods that are made is three-fourths wide lawns, which are made from mill-spun yarns in the warp, and their wefts are from hand-spun yarns, which are spun in Prussia and other parts of Germany. It is a more wiry sort of yarn than that spun by machinery; and goods made from it are not so like cotton nor SO SOFT, as those made from mill-spun yarns in warp and weft

Bleacher's prices for lawns are, viz.—

Set	12 ⁰⁰	13 ⁰⁰	14 ⁰⁰	15 ⁰⁰	16 ⁰⁰	17 ⁰⁰	18 ⁰⁰
Price	/8½	9½	/11	1/0	1/1½	1/3	1/5
Set	19 ⁰⁰	20 ⁰⁰	21 ⁰⁰	22 ⁰⁰	23 ⁰⁰	24 ⁰⁰	
Price	1/8	2/0¾	2/5	2/6	2/9	3/0	

The first cost price for three-fourths lawns in the brown state, will be seen by expenses of manufacturing as under.

YARNS REQUIRED TO MAKE THREE-FOURTHS WIDE
LAWNS—FIFTY-TWO YARDS.

Quality or Set.	Quantity of Hanks	Number of Warp.	Number of Weft.	Germ. terms, Loth.	Price of Yarns, weaving, etc.
12 ⁰⁰	28 30	60	75	2¾	3¼d. per hank £ s. d. 3¼d. do. 0 0 4 Boiling 0 1 2 Warping and Winding 0 0 10 Weaving 0 6 0 58 hks. make 52 yds. } cost 6¼ per yard. } 1 7 0
16 ⁰⁰	58 77¼	100	115	1⅝	6d. per hank 0 10 8 4¾d. do. 0 15 10 Warping and Winding 0 1 2 Boiling 0 1 7 Weaving 0 12 0 77¼ hks. will make 52 } yds. cost 11½d. per yd. } 2 9 3
20 ⁰⁰	46½ 49 95½	150	180	⅞	9½d. per hank 1 16 9 9d. do. 1 16 9 Boiling 0 2 0 Warping and Winding 0 1 3 Weaving 0 1 2 95½ hks. make 52 yds. } at 1s. 10¾d. per yard. } 4 18 0

Linens and lawns are counted on the one side, warp and weft. For example, a 20⁰⁰ should (with forty-nine hanks of weft) count in warp twenty threads, and in weft twenty, and in some places twenty-one shots under a linen glass.

The above being an example of the cost of making three-fourths wide lawns, I shall here add the scale for making, which will be found useful and correct.

YARNS

CALCULATED TO MAKE THREE-FOURTHS WIDE LAWNS,
FIFTY-TWO YARDS LONG.

Quality or Set.	Hanks.	Number of Warp.	Hanks.	Number of Weft.	German Terms for Yarns.
12 ⁰⁰	28	60	30	75	2 $\frac{3}{4}$
13 ⁰⁰	30 $\frac{1}{8}$	70	33	85	2 $\frac{1}{2}$
14 ⁰⁰	32 $\frac{1}{2}$	80	35	95	2 $\frac{1}{4}$
15 ⁰⁰	35	90	38	105	2 $\frac{1}{2}$
16 ⁰⁰	37 $\frac{1}{8}$	100	40	115	1 $\frac{5}{8}$
17 ⁰⁰	39 $\frac{1}{4}$	110	42	120	1 $\frac{3}{4}$
18 ⁰⁰	42	130	44	140	1 $\frac{1}{4}$
19 ⁰⁰	44 $\frac{1}{4}$	130	47	160	1
20 ⁰⁰	46 $\frac{1}{2}$	150	49	180	$\frac{7}{8}$
21 ⁰⁰	49	180	52	200	$\frac{3}{4}$
22 ⁰⁰	51 $\frac{1}{3}$	200	54	240	$\frac{3}{8}$

Handkerchiefs are made similar to lawns from mill-spun warp, and hand-spun weft yarns, but as a finer description of yarns is used of the same reed, I think proper to add here the scale for making them also.

YARNS

CALCULATED AND REQUIRED TO MAKE HANDKERCHIEFS,
10 DOZENS EACH PRICE, 21 INCH.

Quality or Set.	Hanks.	Number of Warp.	Hanks.	Number of Weft.	German Terms for Yarns.
12 ⁰⁰	30	70	32	80	2 $\frac{1}{2}$
13 ⁰⁰	32 $\frac{1}{2}$	80	34	95	2 $\frac{1}{4}$
14 ⁰⁰	35	90	37	105	2
15 ⁰⁰	37 $\frac{1}{2}$	100	39	115	1 $\frac{3}{4}$
16 ⁰⁰	40	115	42	120	1 $\frac{3}{8}$
17 ⁰⁰	42 $\frac{1}{2}$	130	44	140	1 $\frac{1}{4}$
18 ⁰⁰	45	140	47	150	1 $\frac{1}{8}$
19 ⁰⁰	47 $\frac{1}{2}$	150	59	160	1
20 ⁰⁰	50	160	52	180	$\frac{7}{8}$
21 ⁰⁰	52 $\frac{1}{2}$	170	54	200	$\frac{3}{4}$
22 ⁰⁰	55	180	57	240	$\frac{3}{8}$

The present prices of handkerchiefs are (as sold by the dozen in the white state) as follows :—

12 ⁰⁰	13 ⁰⁰	14 ⁰⁰	15 ⁰⁰	16 ⁰⁰	17 ⁰⁰	18 ⁰⁰	19 ⁰⁰	20 ⁰⁰	21 ⁰⁰	22 ⁰⁰
5/0	5/6	6/9	7/6	8/6	10/6	12/6	14/6	16/6	20/0	22/0

Having given the scale for making handkerchiefs, I shall add an example, in order to show the manufacturing price, or as it is called, the price in the brown state.

Y A R N S .

REQUIRED TO MAKE A TEN DOZEN PIECE OF HANDKERCHIEFS, TWENTY-ONE INCHES.

Quality or Set.	Quantity of Hanks	Number of Warp.	Number of Weft.	Germ. terms, Loth.	Prices of Yarns, weaving, etc.
14 ⁰⁰	35 27	90	105	2	6d. per hank £ 0 17 6 7½d. do. 1 3 1 Boiling 0 1 6 Warping and Winding 0 1 0 Weaving 0 14 0
	72				72 hks. make 10 doz. } 2 17 1 at 5s. 8½ per doz. }
18 ⁰⁰	45 47	140	150	1½	9d. per hank 1 13 9 1s. 1d. do. 2 10 11 Boiling 0 1 11 Warping and Winding 0 1 3 Weaving 1 5 0
	92				92 hks. make 10 doz. } 5 12 10 at 11s. 3d. per doz. }
22 ⁰⁰	55 57	180	240	5⁄8	1s. 3d. per hank ... 3 8 9 1s. 5d. do. 4 6 9 Boiling 0 2 4 Warping and Winding 0 1 8 Weaving 2 8 0
	112				112 hks. make 10 doz. } 10 1 6 at 20s. 1½d. per doz. }

As this finishes all the calculations that I consider to be required, in order to make the different articles of linen manufacture which our markets are supplied with, with the exception of sheeting and damask goods, I shall conclude my observations, on this part of the subject, by referring parties

wishing to make strong sheeting, to the scale for making strong four-fourths linen, which will direct them as to the method of making sheeting, by calculating the difference in the breadth they require.

The manufacture of flowered or figured goods, such as damask, diaper damask, new and old diaper, varies so much, that I shall not attempt to lay down rules for the making of them, it being a branch I have had very little experience in; therefore, I shall conclude my remarks on the subject of linen manufacture, by adding the present prices of those articles in the Irish markets on Thursday, the 21st of August, 1845.

In the Lurgan Market—

Damask,	$\frac{8}{4}$	$\frac{10}{4}$			$\frac{8}{4}$	$\frac{10}{4}$
	2/1	3/0 per yard.	Diaper Damask,	1/5½	2/0 per yard.	
	$\frac{6}{4}$	$\frac{7}{4}$	$\frac{8}{4}$	$\frac{10}{4}$		
	Diaper,		/9 /9½ 1/1½ 1/6 per yard.			

Having always used for *warp and weft* the very best description of yarns, during the many years I manufactured linen goods, I found the yarns described below to answer. The first quality is from 30 to 60, being spun from the very best sort of Flax, but is *too high in price* for anything but *superior drill*; but I found we require yarns from 60 to 160 for the best sorts of four-fourths linens; the second quality from 30 to 70 lea, makes a prime article of linen warp, and from 70 to 120 makes the very best description of light linen warp. The third quality is calculated for warp for a second description of strong linens, up to three pound or 70 lea; and from that to one-and-a-quarter, or 160 lea for weft. The fourth quality will make lawn warp from 55 up to 120 lea, and strong drill from 55 down to 30 lea, drill warp. The tows from 16 to 35 lea will warp coarse goods; and from 35

lea to 100 lea they will weft light linens; and for diaper or damask, weft tow-yarns answer as well as Flax, but prime damask should be all Flax-yarns.

PRICES
OF THE BEST DESCRIPTION OF LINE AND TOW YARNS,
SEPTEMBER 4TH, 1845.

LINE YARNS.			LINE YARNS.		IRISH FLAX YARNS.		TOW YARNS.		
Size of each No. in Lea per lb.	No. 1.	No. 2.	No. 3 quality		No. 4 quality.		Size.	No. 1.	No. 2.
	Price per bundle	Price per bundle.	Size.	Price per bundle	Size.	Price per bundle		Price per bundle	Price per bundle
	s. d.	s. d.		s. d.		s. d.		s. d.	s. d.
25			8	8 6			14	9 3	
30	9 3	8 9	6 $\frac{1}{2}$	8 3	30	7 3	16	8 6	
35	9 0	8 6	5 $\frac{3}{4}$	8 0	35	7 0	18	8 3	7 6
40	8 9	8 3	5	7 9	40	6 6	20	8 0	7 3
45		7 9	4 $\frac{1}{2}$	7 3	45	6 3	22	7 9	7 0
50			4	"	50	5 9	25	"	6 9
55			3 $\frac{3}{4}$		55		30	7 " 6	6 6
60	8 3		3 $\frac{1}{2}$	7 0	60		35	7 3	6 3
65					65		40	7 0	"
70		7 6	3	6 6	70	5 6	45	6 6	"
75					75		50	6 3	5 " 6
80			2 $\frac{1}{2}$		80		60	6 0	
90	8 6		2 $\frac{1}{4}$	6 3	85		70		
100	9 3	7 9	2	6 9	90	5 9	80		
110	9 9	8 0			95	6 0	90	5 6	
120	10 6	9 0			100	6 3	100		
130	11 6				110	6 .9	110		
140	12 9				120	7 3	120		
150	14 0								
160	15 0								
170									
180									
190									
200									

Prices of Flax and tow-yarns spun from Irish Flax, and calculated to make a prime article in linen goods. The numbers from 40 lea to 75 are well adapted for light linen or lawn warp, and the finer numbers are the best in the market for strong linen weft; the tow-yarns are calculated for drills and light linen weft.

PRICES

OF FLAX AND TOW-YARNS, SEPTEMBER 4TH, 1845.

FLAX YARNS.				Tow Yarns.	FLAX YARNS.				Tow Yarns.
Size of each No. in Leas per lb.	Superior Quality Strong Drill W.	1st Quality Strong Linen Warp.	2nd Quality Light Warp and Linen Weft.	Drill and Linen Weft.	Size of each No. in Leas per lb.	Superior Quality Strong Drill W.	1st Quality Strong Linen Warp.	2nd Quality Light Warp and Linen Weft.	Drill and Linen Weft.
16			<i>s. d.</i>	<i>s. d.</i>	95			<i>s. d.</i>	
18				7 0	100			5 6	
20				6 9	105			5 7½	
22				6 4	110			5 10½	
25				6 3	115			6 1½	
30				6 0	120			6 4½	
36				5 9	125			6 7½	
40				5 6	130			7 3	
45				5 3	135				
50		Warp.	5 6	”	140			8 6	
55		”	”	”	145				
60		”	”	”	150			9 6	
65		”	”	”	160			10 6	
70		”	”	”	180			13 0	
75		Weft.		5 0					
80		0 0							
85		”							
90		”							

Yarn is made up in bunches of three or six bundles. The above prices are by the English bundle of 60,000 yards.

1½ Yard Reel.

100 Threads ...	1 Lea	150 Yards.
12 Leas	1 Half-hank	1,800 ”
100 Half-hanks	3 English bundles,	180,000 ”

2½ Yard Reel.

120 Threads ...	1 Lea	300 Yards.
12 Leas	1 Hank	3,600 ”
16⅔ Hanks ...	1 English bundle,	60,000 ”
50 Hanks ...	3 Bundles	180,000 ”

LETTER I.

A PROOF FROM MR. SPROULE'S ESSAY ON FLAX, THAT A NET PROFIT OF FROM £20 TO £30 PER ACRE CAN BE MADE BY CULTIVATING THE PLANT.

Not having heard from Mr. Sproule, I answered his letter in the *Gardener's Chronicle and Agricultural Gazette*, on the 15th of March. On learning from some gentlemen, friends of mine in the country, that he had published an *Essay on Flax Cultivation*, for which he obtained a medal from the Royal Dublin Society, I had the curiosity to purchase a copy, and having perused it with *much care*, I considered myself called upon to notice two paragraphs in his work, as it appears to me his attempt to contradict my letter was *inconsistent, if not unfair*, when he had at the same moment a work on the subject *for sale in the market*, which asserts that £30 per acre, *clear profit*, can be obtained from Flax-growing, although he condemned my statement of £20 per acre profit as being erroneous; however, as it is truly said, that whatever promotes discussion is always advantageous to the cause of truth, I have thought proper to bring before the readers of the *Gardener's Chronicle and Agricultural Gazette*, Mr. Sproule's ideas on Flax culture in 1844, when writing a pamphlet *for sale*; and his ideas in 1845, when he found that British farmers were likely to be informed by me, *through the public press*, of the advantages to be gained by the growth of the plant.

As Mr. Sproule styles himself editor of the *Irish Farmer's Journal*, he has very likely had a better opportunity than most people (as his Essay will prove) of collecting from the reports of the Irish Linen Board, the Belfast Flax Improvement Society, and *Rham's Flemish Husbandry*, matter sufficient to form an interesting work on the subject. However, what I have to submit for perusal is the result of PRACTICAL

EXPERIENCE and *personal observation*, and therefore I beg to refer the reader to the following :—

*To the Editor of the “ Gardener’s Chronicle and
Agricultural Gazette.”*

“SIR,—I have occupied a little of my time, and a considerable space in the columns of your journal, for the purpose of making good my arguments in favour of Flax culture ; and in hope of doing away with the unfavourable impression of it on the minds of the agriculturists, which your remarks, and those of Mr. Sproule, on my first letter were calculated to have produced, I must call attention to the evidence which the latter gentleman has given elsewhere on the subject. Mr. Sproule says, in page 7 of his Essay :—‘ Another important circumstance connected with this subject should not be lost sight of by the Flax-growers. The depression so severely felt for several years past has chiefly affected the inferior qualities of Flax, and when a superior article was brought into the market it invariably brought remunerative prices. A large proportion of the article brought into the market has, for many years, not realised more than from 37s. to 40s. per cwt., which, even in the case of the heaviest crops, could not by any means remunerate the farmer ; but it is to be observed that at the same time, samples of good quality brought 80s. and upwards. Indeed, so great is the difference in price between superior and inferior samples of Flax, that even at the present time the former will fetch £7 per cwt., while the average price does not nearly approach half that sum. Here then, is a splendid field for exertion. If the return from the growth of Flax can be doubled without devoting another acre to its cultivation, what an increase would thereby be made to the resources of the country. That an approximation to this is capable of being effected, no reasonable doubt can now be entertained. The seed itself is a most important considera-

tion with a foreign grower, though almost entirely neglected in this country; so important, in fact, that more is returned by *the seed alone*, under proper management, than the Irish farmer obtains for the *entire crop*.' He next goes on to say:— 'That the soil and climate of Ireland answers, the superiority of the samples occasionally produced (in cases where a proper course of management has been adopted) is a proof. To this circumstance it is that we are indebted for the establishment of the Flax Improvement Society, in one of the resolutions of which we find it expressly declared that ignorance of a proper system in the management of the Flax-crop in this country is alone the cause of its inferiority to the produce of the continent; that this is now established beyond a doubt, and that by the introduction of those right principles that are wanting, our farmers may share the benefits at present possessed exclusively by the more skilful cultivators of France, Belgium and Holland.' *Now it will be recollected*, I quoted 10s. per stone, or £4 per cwt. for good middle quality, and Mr. S. condemned me for doing so. What, then, must those who read his letter in answer to mine think now, when they find that *he had then* a pamphlet for sale, dated at Dublin, 1844, which represents, in as strong terms as my letter, the advantage of Flax culture, and that there is 'a splendid field for exertion,' because of the difference between superior and inferior quality, as the prices range from 37s. to 140s. per cwt. It is evident, that according to his (Mr. S.'s) own showing, my quotation of £4 per cwt. was not above the middle price; but he finishes his letter by declaring that mine was erroneous, and that £15 per acre profit would be a high average, and more than could be realised. I must, therefore, quote another paragraph from his Essay. At page 29 he says—'The produce of Flax, even under the best system of management, will of course vary according to the soil, season, and many other particulars. In those parts of the continent

where its culture is so well understood, it is esteemed the *golden crop*, and regarded as superior to any other on the farm. The ordinary produce there is from £20 to £30 per acre, independent of the seed, which is worth £5 or £6 more. The seed alone, which has hitherto been entirely neglected in this country, may, at a low calculation, be assumed to repay the *cost of the seed sown, with all other charges attending the cultivation and manufacture of the crop*, leaving the fibre altogether as *net proceeds*. Here, then, is a splendid field for exertion, and our farmers may take shame to themselves if they rest satisfied with their former returns. There need not be the slightest fear of the supply exceeding the demand, for however great exertion may be made for the extension of the culture of Flax, it will be many years before our spinners can obtain a sufficient supply in the home market.' I beg of those who have read Mr. Sproule's letter in your journal of February, to compare it with this statement taken from his own Essay. He found great fault with me for what he termed 'the unpardonable omission of the seed.' He valued it then at only '£4 10s. per acre,' although in his Essay he values it at £5 or £6; and then he adds, 'it is sufficient to repay the seed sown, with *all other expenses* attending the crop, *leaving the fibre AS NET PROCEEDS*.' Now, if we believe this latter statement, that the seed will pay *all charges* on growing an acre of Flax, we must believe it to be worth from £9 to £10, for with rent, seed, and other expenses incurred, an acre cannot be produced at less expense than £9 or £10; therefore, Mr. Sproule's Essay proves that from £20 to £30 per acre net profits can be made, although he condemned my statement of £20 per acre profit, by representing that £15 was a larger sum, or average, than farmers could calculate on obtaining. Having now, as I conceive, justified my former statements on this subject, I beg to call the attention of landlords and agriculturists to the proceedings of a monthly meeting of the Belfast Flax Improve-

ment Society, particulars of which I have received from their secretary, James M'Adam, Esq., a copy of which I observe is to be found in your *Gazette* of Saturday, page 481. It corroborates my former statements, when I said that the English and Scotch Flax-spinners, who are a very wealthy and influential body, are certain to contribute liberally towards the formation of a society in this country similar to the Belfast Flax Improvement Society, provided the landlords and farmers can be brought to see (as the Irish landlords and farmers do) the great benefit derived from Flax culture; and as the British farmers are a calculating class, and far from following the example of our railway speculators in their business movements, it is to be hoped that English and Scotch landowners will consult and join with British spinners in promoting a society calculated to instruct the farmers of this country in the cultivation of the plant, as it cannot be denied that it will be a national benefit; and if the matter be taken up by landlords and farmers with the same spirit and determination as their brethren in Ireland have done, it is evident, from what has appeared in your paper last week, they may calculate on the *undivided support* of the Flax-spinners of Britain.

"I am, Sir, yours faithfully,

"J. H. DICKSON.

"6, De Beauvoir Square, London,
30th July, 1845."

LETTER II.

ON THE EXPENSES AND PROFITS ON EIGHT ACRES OF WHEAT,
COMPARED WITH EIGHT OF FLAX.

To the Editor of "Edinow's Journal."

"SIR,—I beg to express my thanks for your prompt attention to my request, by inserting in the columns of your journal my letters on rotation, cultivation, and management of the Flax-plant; and inasmuch as, by attention to the method described,

any experienced farmer can cultivate the plant to perfection, I should like to avail myself of another opportunity, through the columns of your paper, to point out the advantages that may be gained by landlords and tenants in encouraging the growth of Flax in this country.

“Aware that theoretical observations can never entirely obliterate prejudice, I will place before those interested in the well-doing of the farmers of this kingdom, facts and experiments which I hope will be sufficient to raise the curtain that has so long hidden the stage of the great agricultural theatre of Europe, and concealed from the eyes of the British farmers the profits of Flax-growing derived by their continental agricultural neighbours, from which England derives scarcely any benefit, although it appears, from the *Irish Farmer's Journal*, these people have been draining annually *from us* between *ten and twelve millions sterling* for Flax, oil-cake, and Flax-seed; and it appears by the parliamentary returns up to the 5th of January, 1844, that this sum, drawn by our continental friends, is very little short of the whole value of manufactured cotton goods exported by us to all parts of the globe—viz., £16,249,268. By the same returns, I observe that the whole amount of *our exports* in Linen, Flax, and Tow-yarns, was £3,603,079; so that it follows, we consume the agricultural produce of Belgium, &c., to the amount of *from seven to nine millions sterling* annually, and this sum *may and ought to be* kept in this country, if landlords and farmers will but study their own interests. I would just say to the calculating farmer—Consider the population of Great Britain 18,800,000, deduct the inhabitants of *cities, towns and villages*, who are merchants, manufacturers and traders—then, on seeing what number you may allow to be farmers, ask yourselves, *how much of this twelve millions your own share may be?* and do not forget the example you have before you in the north of Ireland, where Flax-spinners declare that some of them who have paid

£40,000 per annum to the French, Dutch and Russians for Flax, now distribute those large sums annually amongst the farmers in their immediate districts.

“Having inserted in my former letter, published in your paper, on this subject, the names of several gentlemen who have, by instructions from the Belfast Flax Society and myself, grown Flax in this country and in Ireland, with profits ranging from £20 to £50 per acre, I wish to bring forward additional proof, in order to satisfy agriculturists that no crop will remunerate them like that of Flax; and as I have just had a conversation with a gentleman who farms several hundred acres in Norfolk, and frequently grows Hemp, but who has never attempted to produce Flax, I shall quote his calculation as to the expenses and profits on the growing of eight acres of wheat, in order that those who read this letter (and are not practical farmers) may compare the expenses and profits, which are evidently in favour of Flax-growing. This gentleman’s argument against Flax-growing is, that by growing there is *no straw left*, as there is by growing wheat, and as a consequence, the land would be run out for want of manure; but, as by his calculation, eight acres will only produce £16 16s. worth of straw, I think it will not require much calculation to convince farmers who fatten cattle, that £72 10s. worth of Flax-seed, which can be had off eight acres, will produce more manure than £16 worth of straw.

WHEAT.

DR.	£	s.	d.	CR.	£	s.	d.
To eight acres of				By 224 bushels of			
land, at 26s. 9d.	10	14	0	Wheat at 5s. 6d.	61	12	0
„ 120 loads farm-				„ Straw	16	16	0
yard manure,							
at 4s.	24	0	0				
„ Drawing	3	0	0				
„ Spreading	1	4	0				
„ Ploughing	3	0	0				
„ Harrowing and							
rolling	0	8	0				
„ 80 pecks of seed	5	16	0				
„ Drilling	1	0	0				
„ Rolling and							
harrowing ...	0	8	0				
„ Hoeing	1	12	0				
„ Watching	0	8	0				
„ Reaping	2	8	0				
„ Carting	2	8	0				
„ Thrashing	5	12	0				
„ Tithe	1	12	0				
„ Poor Rates	0	16	0				
„ Church and sur-							
vey-rates ...	0	12	0				
Balance, or profit	13	10	0				
	<u>£78</u>	<u>8</u>	<u>0</u>		<u>£78</u>	<u>8</u>	<u>0</u>

“As £13 10s. appears to be the profit that a Norfolk farmer has on growing eight acres of wheat, I beg to call attention to the following:—An Irish gentleman, Mr. Cassidy, of Glenbrook, Mugherafelt, Ireland, in writing on the 26th ult. to the secretary of the Belfast Flax Society, says—‘I have read

with much pleasure and interest the discussion on the Flax question, in the *Farmer's Journal*, and I must say the opponents of Flax do it most gross injustice. For instance, in 1843 I got £145 for Flax grown on barley six Irish acres (or say nine English acres), and I calculate, after making a liberal allowance for expenses, I had £100, or more than £16 per acre *clear profit* by selling the Flax at 8s. to 8s. 6d. per stone in Cookstown.' Then he adds—'This year I saved some seed of the Flax on the Courtray system [before this he did not do so : it was as usual lost in the watering]; on applying it I find the seed excellent [and nutritive food for milch-cows, pigs and horses; and to this kind of food we attribute the remarkable sleekness of animals feeding on it; and we observe that the milk of the cows improves both in quality and quantity immediately after we commence giving them the bolls.'

"Now, as this gentleman states that he had, without the seed, (for it appears he followed in 1843 the old system) a clear profit on the Flax grown on eight acres of ... £100 0 0
We must add to this what seed he should

have had according to the Norfolk farmer's calculation, 29 bushels to the acre, or 232

bushels at 3s. 6d. per bushel	...	...	...	...	72 10 0
-------------------------------	-----	-----	-----	-----	---------

£172 10 0

"Therefore, had he saved the seed, even working the Flax on the old system, he would have had a clear profit of £21 11s. 3d. per acre; whereas, had he managed the whole crop on the improved method, he would have got much more than 8s. 6d. per stone; in all probability 10s. or 12s. It is a well known fact that any uneducated ploughman can sow and reap off an acre of good land from thirty to thirty-five bushels of wheat or barley. In this case, the land gives the quality, and does all after the seed leaves the hand that sows

it ; but in Flax growing the land will not do all—it produces the bulk, but skill and hand management give the quality ; therefore, the cultivation of such a crop is certain to give pleasure and profit to a skilful and practical farmer, who will give the plant the attention required.

“ Having read with pleasure the letter following mine, in page 247 of the *Gardener's Chronicle*, and agreeing as I do with the writer's views and with every syllable he makes use of respecting the neglected portion of Ireland ; and comparing those parts with the northern province, which is attended to by considerate landlords—such men as the late and much lamented Marquis of Downshire—and knowing as I do the good results from landowners in that quarter taking up the subject of Flax cultivation, and interesting themselves in everything calculated to benefit their tenantry, I must borrow a few words from the letter alluded to, and ask how it can be that the newspapers are daily filled with advertisements of railway companies, joint-stock companies, and many other uncertain speculations, patronised, as would appear from the prospectuses, by noblemen and other landed proprietors, yet not one company has started in this country to grow or to encourage the growth of Flax, an article that is consumed in such quantities, and is of such vast importance to the landed interest ; and above all, so certain to leave a profit for labour and money employed ? I do not expect to see the government starting model-farms in every county or district in England ; but I say, if the landowners of Great Britain will not be alive to their own interests, individual capitalists had far better invest their money and try what they can do to keep in this country the £10,000,000 or £12,000,000 sterling now paid away annually to foreigners for Flax, oil-cake, and Flax seed. They will find a ready market in Yorkshire and Lancashire for all the Flax they can produce ; and they will find buyers for their seed and oil-cake

among the farmers who may not grow it, for they do admit it is superior to anything yet found out for fattening cattle.

“As landowners are prevailed upon everywhere to lend their names, capital and influence to speculation on embankments and excavations, it might be prudent for them, while they sink their money in railways, to reflect on the state of the tenant farmers, while the manufacturers, to a man, are calling out for open ports and a free trade in corn; and as by this letter I prove that a farmer can grow on eight acres of land what will leave £172 10s. profit, a sum sufficient to pay the rent of a farm containing 125 acres at the highest average price in England (Leicester, £1 6s. 9d.), it might be advisable for landed proprietors to do less in railways and use a little of their unemployed capital and influence in establishing a company for the growth of Flax, an article that it is evident will enable farmers to pay their rents, regardless of the present protecting duty, whether on or off. This could be done by a joint-stock company, with branches and model farms in different districts; such a company would command the influence and assistance of a powerful and wealthy body—the Flax spinners of Great Britain—who are deeply interested and most anxious to see an article grown at home for which they have to look to foreigners—an article so superior to cotton in texture and durability. Such a company will not only act as a GOLDEN LINK BETWEEN AGRICULTURE AND COMMERCE, but the good effects are certain to be soon felt by the majority of the people, small farmers and labourers—a class whose condition landlords should study to improve, for by so doing they will enlist an army of defence, in reality a *protective society*, so that all attempts in future to create disunion between the PEOPLE and their LANDLORDS *would be in vain*.

“As English landowners need not be told that spinners and manufacturers of cotton keep their eyes steadily on what is most likely to benefit their trade, it may not be out of place

to inform them that, as the short staple of cotton can never be got to unite or work in with the long staple of Flax, there can be no amalgamation of those articles, and as a consequence, there is but little chance of *an interested union between the cotton and agricultural interests*, for, in my opinion, they are as wide as the poles. This being the fact, let the landowners of Britain encourage the landowners to cultivate Flax—an article certain to increase the linen manufacture of this country—and they will soon find that (as he that will be free must strike the blow) they have struck a heavy blow at the head-quarters of discontent, where the cotton trade is extensively carried on by persons who are not to be quieted until (like Belfast) many of their mills and power-looms are turned from cotton to the spinning and manufacture of Flax—an article that I am prepared to prove will not exhaust the soil more than a crop of Wheat, whilst I prove that by many experiments, the profits far exceed any other crop the farmer can commit to the soil.

“I am, Sir, yours respectfully,

“J. H. DICKSON.

“London, 31st May, 1845.”

LETTER III.

FLAX A RESTORATIVE, NOT AN EXHAUSTING CROP.

[AUTHORITY: PROFESSOR KANE.]

To the Editor of the “Intelligencer.”

“SIR,—As there are many eminent houses engaged in Flax-spinning in your town, who would, no doubt, rejoice to see the Yorkshire farmers assembled in Leeds, with their cart-loads and boat-loads of Flax, the produce of their own cultivation—if you will permit me to occupy a column in your journal at this time with a few observations on the subject, in order to remove prejudice and misapprehension, I shall not

again draw so largely on your valuable space, at any one time on the subject.

“As there are many tales told calculated to prejudice landowners as well as farmers, and prevent experiments in Flax-culture being made, I wish now to call attention to observations and experiments, in order to disabuse (if possible) the minds of those farmers who labour under the delusion (handed down to them by their grandfathers) that Flax not only exhausts the soil, but is ruinous to the producer, and as I think the evidence I now bring forward will be sufficient to satisfy the farmers, and prove the absurdity of such threadbare tales, I must address myself to those landlords who prohibit (by the terms of the leases granted) the cultivation of Flax. Surely they are more open to conviction than to continue to believe *mere assertions* in preference to **FACTS PROVED BY EXPERIMENTS**, and corroborated by the **LEARNED AND PROFESSIONAL MEN** whose lectures on agricultural subjects have earned for them the *thanks* of so many noblemen and farmer’s clubs in the three kingdoms. I cannot believe that there is a landowner in England so contracted in his ideas as to take advantage of such restrictions being (through downright ignorance of the nature and value of the plant) in leases against its cultivation. If they consider it a more scourging crop than wheat (and that *I deny it to be*), have we not skilful chemists able to direct us to restore to the soil, by the many now available manures, those ingredients of which Flax may be found to have robbed it? And would not the oil-cake, or what is better, the *crushed seed*, not only be highly beneficial in the *feeding of animals*, but is it not acknowledged **BY ALL** that there is nothing equal to it as *an enricher of the farm-yard manure*? With these facts before the eyes of the opponents of Flax, I shall proceed to call their attention to further evidence on the subject.

“As I cannot expect farmers to give the subject, of which I

am the humble advocate, the consideration that they would do if the same was placed before them by a *man of more influence*, I must, therefore, endeavour to support my argument by the observations of men whose efforts in agricultural improvements have done much to advance and connect science with the agriculture of Great Britain. I have already used the names of Flax-spinners, and in order to corroborate my statements I shall now add that of another, Mr. Crosthwaite, of Dublin, who stands in Ireland, as Messrs. Marshall and Co. do in England, *at the head* of the Flax-spinning trade, and I must couple with this gentleman the name of a professor, whose works are acknowledged to be of *national importance*. The following is a quotation from Dr. Kane's writings:—

“ ‘Mr. Crosthwaite, whose intimate acquaintance with all branches of this industry renders his authority highly valuable, considers that there are about 100,000 acres under Flax in Ireland, and that the produce is about 30,000 tons, of an average value of £50 per ton. This is 6s. 3d. per stone, and should give about £12 10s. for the usual produce of the statute acre. The Flax, when it has grown to suitable maturity, according as the design is to allow it to ripen its seed or not, is pulled, and either immediately or in the next spare season, according to the circumstances of the locality, it is subject to the process of retting or watering. In the stem of the Flax there may be recognised three structures—the outer skin or epidermis, covering a close net-work of fibres which enclose the plant as in a sheath, and in the centre a stem of dense, pithy material. The fibrous net-work is connected together by a glutinous matter, which must be decomposed before the fibres can be separated from the stem, and it is to soften and rot this substance that the plant is steeped. If the steeping be continued too long, the fibre itself may rot, and be weakened and injured in quality; if the steeping be not continued long enough, the fibres are not

thoroughly separated from each other, and the quality of the Flax is coarser than it might be. When the Flax is steeped the water acquires a darker colour, a disagreeable odour, and it is well known, becomes poisonous to fish. This arises from the solution of the glutinous material which had cemented together the pure fibres. The author of the *Survey of Somersetshire* (Mr. Billingsby) says—"Having myself cultivated Flax on a large scale, and having observed the almost instantaneous effect of Flax-water upon fish similar to that produced by lime, I was led some years ago, to apply it to some pasture land, by means of watering carts similar to those used near London for watering the roads; the effect was astonishing, and advanced the land in value 10s. per acre.'"

"This extract shows that Professor Kane has conversed with Flax spinners and has been made acquainted with the details of Flax culture. The following passage on the same subject is taken from the *Scottish Farmer*; and as the writer of the article is already partly convinced against his will, I hope fully to convince him that Flax is not an exhauster of the soil:—

"The landlords of Scotland have hitherto been opposed to the growth of Flax, in consequence of its being a "scourging" crop, and in the majority of leases a clause is introduced prohibiting or restricting its growth. Professor Low says (and all our agricultural authorities agree with him), that Flax is an exhauster of the soil and the farm, and more so when its seeds are permitted to arrive at maturity. When pulled green its effects are less injurious; in which respect it follows the general law of other cultivated plants. But still, at whatever period reaped, it is thus an impoverisher of the farm, that its stems yield no return in manure, and that its seeds only do so when consumed upon the farm. In a paper read by Dr. Kane before the Royal Irish Academy, that gentleman attempts to prove that in the production of the fibre no exhaustion of the

soil takes place, that substance being exclusively composed of organic matters derived from water and the atmosphere. He says, "in this respect the fibre differs from the woody stem which it surrounds; as the latter, by combustion, yields a considerable quantity of ash, consisting of inorganic compounds derived from the soil; but then the woody part of the plant is not removed off the farm, it being of exceedingly little value; and however the cultivation of the crop may exhaust the particular part of the farm on which it was grown by the matters contained in this woody fibre, it is apparent that the farm itself will not thereby be exhausted, as these matters are returned to some other portion of it in conjunction perhaps with the manure of the farm-yard. The proportion of inorganic matter contained in the seeds is very small compared with its entire bulk, so that the consumption of the seed on the farm not only makes the Flax a non-exhausting crop, but absolutely a restorative one.'"

"Dr. Kane is supported in his theories by the report of the Belfast Society, which says, 'the principal objection urged against the extended growth of Flax is, that it exhausts the soil without returning anything to it. But by saving the seed and seed bolls, and feeding upon them, the manure thus produced can be returned to the ground, and will supply most of the valuable constituents abstracted from it during the growth of the plant. The Flax shaws from the mill and the putrescent water from the Flax pools should be fermented together and returned to the soil. The land would thus have replaced on it almost every particle of matter formerly abstracted by the crop; as it has been ascertained beyond a doubt by chemical analysis, that the fibre for which the Flax plant is cultivated, is produced entirely from the atmosphere.'

"If we consider the quantity of seed for consumption on the land given by the Flax-crop, we may well call it a manure-producing crop, rather than an exhauster of the soil.

At the monthly meeting of the Belfast Flax Society, held on the 16th of July, the following letter, which had been sent by one of its members, was read by the Secretary:—

“ ‘ I am happy to be able to bear my testimony to the fact that if Flax be judiciously grown and well handled, *there is no other crop that will pay like it.* I had last season not quite eight Irish acres of Flax, from which I had 295 stones, which brought 8s. per stone in Cookstown market, and 31 stones at 6s., besides $4\frac{1}{2}$ cwt of scutching tow, at 9s. per cwt. :—

295 stones, at 8s.	...	...	£118	0	0
31 stones, at 6s.	...	...	9	6	0
$4\frac{1}{2}$ cwt. tow, at 9s.	...	...	2	0	6
			£129	6	6

being upwards of £16 per acre ; besides this, I had an exceedingly large quantity of bolls, which fed my cattle to the greatest advantage during *the whole season*, and as much seed saved, on the Courtray system, as sowed about three acres this year.’

“The seed in the bolls, if it amounted to an average Norfolk crop, would be equal at least to 319 bushels, so that I may add to the £129 6 6
The value of 319 bushels of seed, at 6s. 3d.

per bushel	...	...	...	...	99	13	9
					£229	0	3

And 11 English acres, if it cost £100 to bring it to market, would have £129 profit on what I call a middling or very light crop of Flax, viz.—30 stones per acre.

“ Now, with all deference to Professor Low, I must believe experiments before his assertions ; and I believe that Flax has never got a fair trial in Scotland to enable him to tell us how

much more it exhausts the soil than a crop of wheat, or to answer this question—how much manure will it take to bring the ground into the same condition after growing Flax that it would be in if it had been sown with wheat? It is only in this way we can come to anything like a correct idea of the subject, and, as I have said before, I have had as abundant a crop of oats, and also clover, after Flax, as ever I had after wheat or barley. I challenge the opponents of Flax to answer this question, and then we can calculate the expenses of restoration, and the means we have of doing it by growing Flax; for, according to every calculation I have seen, showing the expense and the profit on wheat or any other crop, there is none to be compared with *even a middling crop of Flax*, as the most remunerating crop for the farmer—and as I am not confined to the quotation of *one, two, or three experiments*, in order to prove the fact, I shall give another instance of what may be made by its cultivation.

“The Rev. G. Ash, Glebe, Ballaghy, Ireland, in writing to the Secretary of the Belfast Flax Society, to tell him of the success of his first experiment, says:—

“‘I sowed thirty-three pecks of seed on three acres and three roods of ground, Irish measure, and I have had 236 stone of 16lbs., or in Armagh-market stones 266½. I have two sacks grown from the same seed saved from my own sowing, and I have two tons of linseed meal, which saves me purchasing bran, &c.’

“Here is the first experiment. A gentleman unacquainted with Flax-growing sows 13¼ bushels of seed on about five English acres, and as 266½ stone, or 53¼ stone to the acre, *two sacks of seed and two tons of meal*; now, as it is well known that the seed, if properly saved, will pay RENT AND ALL EXPENSES, we must reckon Mr. Ash had for his trouble, profit as follows:—266½ stones of Flax, say 8s. per stone, £106 8s. 0d. Added to this proof of the benefits derivable from Flax

cultivation, I shall quote one more on its advantages, which I have taken from the *Agricultural Gazette* :—

“ ‘EFFECT OF OIL-CAKE ON THE MANURE OF THE ANIMALS FED ON IT.—A friend of mine has lately adopted a plan, which under the same circumstances I should strongly recommend; it is that of giving a small quantity of oil-cake to animals grazing, for the sake of improving an ordinary pasture; and its effects are astonishing. The pastures I allude to are small, and one or two more bullocks than they are calculated to carry are put into each: the lot are then allowed 4lbs. of cake per day per head; this at a cost of about 2s. per head per week—which I believe the stock well paid for—has entirely altered the face of the pastures from what they were three years ago, when the plan was first adopted by him, and I believe without any loss to himself.’—*G. Dobito, English Agricultural Society's Journal.*

“I could, if necessary, multiply evidence; however, as I consider I have now placed undeniable facts before you, I will conclude my remarks by a quotation from a letter from James M'Adam, Esq., Secretary to the Belfast Society, on the 18th December last. He says, ‘As a proof of the great demand for Flax at present, I may mention that from this port orders are now out for 300 tons of Flax from Egypt, and from 2,000 to 3,000 tons, value £70,000 to £100,000, from the Baltic; and this in spite of the largest home-grown crop for several years. There have been lately erected in this neighbourhood 60,000 additional spindles, which will be at full work during the ensuing year, and which, it is calculated will consume 3,000 additional tons of Flax yearly.’

“If this be not proof sufficient to satisfy farmers and land-owners of the importance of Flax-cultivation, I can only say that they require such men as the learned Professor Kane to go amongst them.

“I am, Sir, yours respectfully,

“J. H. DICKSON.

“6, De Beauvoir Square, London.”

LETTER IV.

FLAX IMPROVEMENT SOCIETY'S MEETING AT BALLINASLOE,—FLAX
CULTURE CONDEMNED BY MR. BEAMISH.

Observing in the *Agricultural Gazette*, on Saturday, at page 744, that objections were made to the cultivation of Flax by Mr. Beamish, at Ballinasloe, I think proper to give the particulars as they appeared in that journal, hoping to convince that gentleman of *his error* in taking for his guide the productions of *theorists* in preference to the opinions of *practical men*; and as I intend to notice his quotations from Mr. Stephen's *Book of the Farm*, I shall first present my readers with Mr. Beamish's observations, and after giving space to the answers of Messrs. Macartney, Walker, and Hazlett, gentlemen farmers from the North of Ireland, whose remarks, from thirty years practical experience in Flax-culture, will no doubt have their effect with British farmers, I hope to satisfy those who believe Mr. Stephen's observations on the nature of the Flax-plant, that he has imprudently, if not unfortunately for himself, touched on a subject that I am prepared to prove he is *totally ignorant of*, however deserving his work may be on *other matters* connected with agriculture.

FLAX IMPROVEMENT SOCIETY.

“A meeting of the Flax Improvement Society was held at Ballinasloe during the visit of the Irish Agricultural Society. The Secretary read the report of the proceedings of the Society for the last year. After the report had been read, Charles Beamish, Esq., county Cork, proceeded to state some objections to the cultivation of Flax as being deteriorating to the soil. He said:—‘According to Mr. Stephen, in his *Book of the Farm*, page 1036, Flax must be kept clear of weeds during the summer; and as to growing grass seeds, even the low-growing white clover, amongst Flax, it should make no

difference to the Flax-plant whether it is choked by a valuable or a worthless plant, since both would equally be weeds in reference to it. Sowing Flax on clean land will save much of the cost of weeding (that is after a green crop) as turnips and potatoes, the cleansing of which will have rendered the soil comparatively clean for Flax. If Flax be thus cultivated in lieu of a corn crop, its culture may be practised without much deterioration to the land; but if it be determined to regard Flax as a green crop and cause a corn crop to follow it, the land will in time assuredly feel the scourging effects of such a system, and oblige its cultivators to abandon it altogether. It should never be lost sight of, in considering this question, that to raise Flax must bring it into competition with white crops and not green crops, because to raise it as a green crop would be to deteriorate its quality, by bringing it into immediate contact with manure, and if it be raised without manure as a fallow crop, it must materially deteriorate the soil; no species of crop being more scourging to the soil than Flax, not even a crop of turnip-seed. In the harvesting of a Flax crop we are placed in this dilemma—that either the quality of the Flax or the seed must be sacrificed. The seed separately will not pay the expense of culture. Seed is produced from six to twelve bushels per acre; taking the highest at twelve bushels, that is one-and-a-half quarter, and taking it also for granted that it will be fit for sowing and worth £3 per quarter (the highest price given in 1844), the gross return would only be £4 10s. per acre. The Flax crop varies in weight; of rough dried fibre (according to season and soil), from three to ten cwt. per acre; and taking the high produce, five cwt. per acre of dressed Flax at the highest price in 1844, of £6 per ton, the yield will be £31, from which have to be deducted the expenses of beetling, scutching, and heckling, and waste and loss of straw for manure, when the profit will not exceed £8 per acre; but though such a profit would

certainly pay the expenses of cultivation, yet it presents the most favourable view that can be taken, even with the sacrifice of the seed. In Ireland, the case I believe will be the same, though much of the soil of that country, being mossy, is more favourable to the growth of Flax than that of England or Scotland; yet even there, it would be found impracticable to raise good Flax and good seed from the same piece of ground at the same time, and if the seed is not good the oil-cake will be bad.' ”

OPINIONS OF THE PRESENT FLAX AGITATION IN IRELAND, page 1018.—“ Mr. Henderson, the successful competitor for Irish Flax exhibited at Belfast in 1843, gives his rotation, of cropping as follows :—‘ 1. Potatoes or turnips, dunged and limed. 2. Winter wheat. 3. Flax. 4. Clover and rye-grass cut for hay, being top-dressed with soot. 5. Pasture. 6. Pasture. 7. Oats. 8. Flax.’ Flax coming after a corn crop as above, is injurious to the condition of the soil; and sowing down clover with Flax, after a white crop, is as bad husbandry as can be, and were it practised on land which had grown clover for a long time, clover would soon cease to grow. In Ireland, where the culture of clover is but of recent introduction, it may grow well for some time under any treatment, but the Irish farmer should be aware of the nature of this plant, and rule his practice by our experience, which would warn him against putting so useful a plant to the trial here recommended. Flax will, no doubt, grow of finer quality after a white crop on land in good condition, or on soil naturally fertile; as on such soils it would be coarse, and apt to branch, if grown after a manuring, and if the main object of the Irish farmer is to desire to grow Flax of the finest quality, it would be better to acquaint him at once of the deteriorating effect of Flax thus cultivated upon the condition of the soil, than to encourage him to make the other crops he raises subservient to Flax, and to inculcate in him a wrong

opinion. There seems another wrong opinion abroad in Ireland in regard to Flax, that that really valuable plant is neglected in its culture, and that, were it not for the neglect of the Irish farmer he would be much wealthier than he is. He should be distinctly assured that, in making money in cultivating Flax, he must do it at the sacrifice of either corn or deterioration of soil; for both corn and soil he cannot continue to have in perfection, along with fine Flax. Albert D. Thaer, who conducted a large experimental, agricultural, academical establishment, under the Prussian government, in the neighbourhood of Berlin, from 1804 to 1828, says, in his *Principles of Agriculture*, page 537, 'Flax must not be grown again till after a considerable interval on land which has once borne it. It is thought that a space of at least nine years ought to intervene between two crops of this plant, even in countries where the soil appears best adapted for its cultivation, and where that cultivation is most successfully carried on, as for example, in Belgium.'"

I have not perused the *Book of the Farm*, but I must suppose, as Mr. Beamish condemns Flax-culture, that he brings forward Mr. Stephen's strongest arguments against it; however, I beg to call attention to the reply his observations met with from *practical men*.

After Mr. Beamish had ended his speech, which appeared to excite *universal dissatisfaction* among the *experienced Flax-growers* of the north, Mr. Macartney stepped forward on the court table and said that, "whatever conclusions Mr. Stephens might have arrived at in any theoretical investigation, it was a fact which they (the Flax-growers of the north of Ireland) had proved by more than thirty years' experience, that Flax was not a deteriorating crop when properly cultivated and handled."

The Secretary having called upon G. T. Reilly, Esq., to get upon the table, he rose and said,—“My lord, the secretary

has requested me to get upon the court table, but I feel that I am in my proper position in the advocate's seat, for I am an earnest advocate for extending the cultivation of the Flax crop." After having aptly criticised Mr. Beamish's remarks as being an indictment against the Flax crop, for having done serious injury to some land in the county of Cork, "He hoped the gentlemen present would be willing to listen to every exculpatory evidence in its behalf." He (Mr. Reilly) replied to a question put to him by Mr. Macartney that "He would caution gentlemen farmers from engaging to any great extent in the cultivation of Flax, unless from the humane consideration of giving employment to the labourer."

Mr. Walker, an extensive County Down farmer, and who annually cultivates from forty to sixty *acres of Flax*, came forward at the request of the noble chairman to state the result of his practice. He (Mr. Walker) said that, "After many years experience of Flax-cultivation, he found there was a profit on an average crop of from £15 to £20 annually, per acre, after payment of all expenses. The rotation he would recommend from practice was a five-course shift; the Flax to be sown in every alternate rotation; some other crop to be taken during the intermediate one, but on no account should Flax be sown at shorter intervals than seven years. He found that Flax did not deteriorate the soil for producing any other description of crop, although, when sown too closely in succession, the Flax crop itself was not so good as when sown according to the rotation he had stated." In answer to a question put by Sir Percy Nugent, he (Mr. Walker) said that, "A small portion of the Flax next the root was injured by the clover, but he also found that the clover was materially benefitted by being grown with a Flax crop. It was a crop which gave to the labourer more employment than any other, and at a time of the year when labourer's services were little required; as a large farmer could have his

Flax pulled and otherwise treated before the harvest operations commenced; it was thus a very convenient crop for an extensive farmer."

Sir Percy Nugent then observed that, "The opinion in Westmeath was, that the fibre of the Flax was injured by allowing the seed to become ripe for use." Mr. Walker stated in reply that the general custom was to allow the Flax to stand too long. He conceived that it should be pulled before becoming 'dead ripe,' otherwise the quality of the fibre would be deteriorated. In reply to a question regarding the time that Flax should be allowed to lie on the ground, Mr. Walker stated that, "It depended greatly on the state of the weather, but from eight to ten days were generally required. The ground best suited for spreading it on was a newly-mown meadow, and that, if thinly spread, it did not require to be turned."

"Mr. Hazlett, agriculturist to the Flax Improvement Society, was next called upon to detail some of the modes practised in the growing and handling of Flax. Mr. Hazlett stated that, "The soil best suited for growing Flax was a strong loam on a clay subsoil." He stated "that the difference in favour of the Flax when pulled green and when allowed to become ripe was £4 per acre. The produce of an acre, if pulled green, would realise £20, whereas, when allowed to become ripe it was worth only £16, but the green bolls were only worth £3 per acre, while the ripe amounted to four barrels, which, at £2 each, *would be worth £8 per acre*, thus leaving a balance of £1 in favour of the ripened Flax."

Mr. M'Arthur, Randalstown, stated that, "The depth to which the root of the Flax-plant descended in search of food being from two to three-and-a-half feet, he considered that Flax was not an exhausting crop to the surface soil, as two-thirds or three-fourths of its inorganic food was drawn from the subsoil—the surface being thus comparatively at rest."

Dublin Farmer's Gazette.

Now, as it appears by Mr. Beamish's statement that Mr. Stephen says if a corn crop follow Flax, the effect of such a system will oblige its cultivators to abandon it altogether, I will just beg attention to a few observations made by a gentleman last spring at the Markethill Agricultural Meeting, in Ireland, as a proof that clover and grass, and thin oats of the *best quality, have been grown after Flax.*

Mr. Herd: "I have had much experience in both draining and subsoiling these eight or nine years past. In Gosford demesne we have made nearly 100 miles of drains. To mention all the benefits arising from furrow draining would take up too much time; every practical farmer knows when his land is wet he can neither put in his crop in season, nor take it out; neither will it ripen regularly, presenting always a number of green patches. He must, consequently, lose one part of the crop by waiting for the other, and at the same time, will not have more than half a crop for all his labour and expense. I shall merely call your attention to one field which I furrow-drained and subsoil-ploughed, about five years ago; it is well known to several gentlemen here present that worse land could scarcely be found. I am sure that a farmer who had fifty acres of the same kind (without paying any rent for it) could not make a comfortable living off it. After being furrow-drained and subsoil-ploughed the first year I put in turnips, and in part of that field I had thirty-nine tons of Swedish turnips on the English acre. I have since had an excellent crop of Flax and oats, and two crops of clover and grass off the same field, and last season it grew a crop of oats which averaged in length from *six feet to six feet three inches.* His lordship's schoolmaster had half an acre for a potatoe-garden off this field, which was not drained, but had been manured successively for seven years, and this year I got that half acre into the field, and the fact is, there were only about two stooks on it (of inferior quality) for every

three I had on the other, which I think is a very good proof of the advantages to be reaped from furrow-draining and sub-soiling. The drained portion was also the sooner ripe. This field has been lately ploughed, and any one who recollects what it was before will now find both its colour and nature completely changed, verifying exactly what Mr. Blacker has just explained."

In addition to Mr. Herd's observations, I have no hesitation in saying, from many years experience in Flax growing, and observations that I have been enabled to make upon the practice pursued by several Flax-growing farmers, that the statement or advice Mr. Stephen pretends to be competent to give on Flax-culture, cannot be founded upon practical results. On the contrary, it appears to me to be founded altogether on erroneous ideas. I have sown Flax in April, and before it came up, I have sown clover and grass-seed, and caused a man to walk up and down the ridges with a large thorn bush after him, as a sort of harrow, and after that caused the field to be rolled, and I found I could calculate *with confidence* on having an excellent crop of clover with less seed than if I had sown it with any other crop. I always thought the pulling of the Flax moulded the plants of clover from the luxuriant appearance the field would have in one month after the Flax was carted away; and like Mr. Herd I have had *most abundant crops of oats after Flax*, and therefore I can confidently deny the truth of Mr. Stephen's assertions.

Mr. Beamish asserts (his authority being Mr. Stephen's work), that to raise Flax without manure (that is to take a crop of Flax after barley, the ground being well manured previous for turnips or potatoes), it will materially deteriorate the soil, no species of crop being more scourging to the soil than Flax, not even a crop of turnip-seed. Now, I will not stop here to show what additional profit a good crop of Flax

will produce over all other crops, to restore those ingredients of which it will (like all kinds of crops) rob the soil, but I will produce other evidence to prove that in this assertion also, Mr. Stephen has fallen into error.

In the *Irish Farmer's Journal*, of the 26th March last, the editor in his remarks on Dr. Kane's *work*, says: "In the case of the Flax-plant, to which our author has paid more than ordinary attention, it is seen that the really valuable part, the fibre, is produced from ingredients supplied by the atmosphere; and however much it may be regarded as an exhauster of the soil on which it is produced, yet it cannot be said to be an exhauster of the farm, the materials originally derived from the soil being again returned to it after the plant has undergone the manufacturing processes.

"Hence this fibre, which constitutes the entire money value of the Flax-crop, is produced during the life of the plant by the elements of the atmosphere; and the materials taken from the manure, and from the soil, are in reality, employed by the plant in organising substances which do not make any return to the farmer, but which are on the contrary, under certain circumstances, considered to be positively a disadvantage. It is therefore important it should be understood, that by a proper system, the growth of Flax and similar fibre crops would be destitute of all exhausting influence. That the materials drawn from the soil by such a crop would be found in the waste products of its manufacture, and would be available by being returned to soil to restore it to its original condition of fertility. In order to render this principle fully intelligible, I shall enter into some detail regarding the processes to which the Flax is subjected, and the nature of the products obtained from it.

"The Flax, when it has grown to suitable maturity, according as the design is to allow it to ripen its seed or not, is pulled, and either immediately or in the next spare season,

according to the circumstances of the locality, it is subjected to the process termed retting, or watering. In the stem of the Flax there may be recognised three structures; the outer skin, or epidermis, covering a close net-work of fibres, which encloses the plant as in a sheath, and in the centre a stem of dense pithy material, nearly as hard as wood. The fibrous net-work is connected together by a glutinous matter, which must be decomposed before the fibres can be separated from the stem; and it is to soften and rot this substance that the plant is steeped. If the steeping be continued too long the fibre itself may rot, and be weakened and injured in quality; if the steeping be not continued long enough, the fibres are not thoroughly separated from each other, and the quality of the Flax is coarser than it might be. The general tendency is not to rot the Flax enough, but it is a process requiring very careful management and attention, to conduct it with the greatest advantage.

“ Having already carried our notice this week beyond its due limits, we must reserve our concluding remarks on the *Industrial Resources of Ireland* for another occasion.”

Now, if experiments, corroborated by the opinions of such a man as Professor Kane, will not remove prejudices created by theoretical delusion, I am at a loss to know what will have the desired effect. If Mr. Stephen be right (and that I altogether deny) in saying that Flax is more exhausting than a wheat or barley crop, the question is, what will be the additional amount that the farmer can gain by *Flax-culture*, to enable him to restore his land? Is there any crop, BUT FLAX, that will leave the farmer from £15 to £20 per acre clear profit? I say THERE IS NOT; and I need not bring another proof, after Mr. Walker and Mr. Hazlett's remarks, to corroborate my statements. Mr Stephen asserts that from six to twelve bushels of seed per acre is the most that can be had, and he values it at £3, whilst Mr. Hazlett values the seed of one acre at £8, a

sum sufficient to pay the expenses of cultivating an acre; and we have plenty of proof that from twenty-nine to thirty-two bushels of seed per acre were produced last year in Norfolk. Again, Mr. Stephen asserts that the Flax-crop varies in weight from three to ten cwt. per acre, according to the soil and season; and taking the highest produce, five cwt. of dressed Flax, at the highest price in 1844, £6 per ton, the yield would be £31, from which deduct expenses of beetling, scutching and heckling, waste, and loss of straw for manure, and the profit will not exceed £8 per acre.

Now I confess this calculation is to me a complete puzzle, and as I cannot make out what he means by addition, subtraction, or multiplication, I am of opinion that either Mr. Stephen or I must go to school before writing more on this subject. £6 per ton the highest price for Flax in 1844!—whoever heard of such a price? the yield £31 and profit £8 per acre. Does Mr. Stephen mean £6 per CWT., and that there was £31 worth of Flax, less expenses, growing, etc., amounting to £23 per acre, leaving £8 profit? I cannot make more of this; however, I should like to see the items that make up £23 expenses, incurred in growing *one acre of Flax*, having said that £8 will cover it all.

There is nothing in his observations that so completely proves his ignorance of the value of Flax and the expenses incurred in its cultivation, as his bringing forward as part of the farmer's expenses *the heckling*, as in *no instance* has the spinner ever been known to purchase from a farmer *heckled Flax*, as the Flax is always sold by them in the rough state after being scutched; he also asserts that “in harvesting the Flax-crop we are placed in a dilemma, *either the quality of the Flax or the seed* MUST BE SACRIFICED:” there can be nothing more preposterous than this assertion.

No man that ever grew Flax could fall into such an error as to represent that *either must be sacrificed*. If the Flax

be allowed to get fully ripe the seed will be better, no doubt, for sowing, and the Flax will not be so oily or good; therefore, those who want to rear their own seed for sowing had better keep a few ridges or perches to get fully ripe for that purpose. The Flax may be 1s. 6d. or 2s. 6d. per stone less in value than if pulled more green, but to talk of sacrifice of either is *truly absurd*. Instead of seed being worse for feeding by being saved a little in the green state, when there is not so much oil in it as when fully ripe, the seed being then more composed of vegetable juice is really better for food. Mr. Stephen might just as well argue that upland hay saved in the green state, when the vegetable sap is all in the stem, WILL BE BAD, as to say that "the oil-cake from such seed MUST BE BAD."

I deny that it will be so, because of being saved before it abstracts all the oil from the fibre; and the experiments made in Norfolk, by gentlemen who have tried feeding on home-grown seed and foreign cake, must be sufficient to condemn the assertions of mere theoretical writers.

I have, by this morning's post, (Nov. 7th, 1845) received the *Leeds Intelligencer*, from which I copy the following extract:—"In 1830 there was not a Flax-spinning mill in operation in Ireland; at present there are in Ulster fifty-one in full work, some of them amongst the largest in the United Kingdom. They employ 18,000 persons—there is a million and a quarter of money sunk in the buildings and machinery, and they require a floating capital of £600,000."

This statement is not altogether correct; Messrs. T. and A. Mulholland, of Belfast, had their large cotton factory, which was burnt down in 1828, rebuilt, and commenced spinning Flax in 1828,—there were two small Flax-spinning mills prior to this near Armagh and Newry, and Messrs. J. Grimshaw and Son, in 1830, turned their print works to Flax-spinning, Messrs. Boomer and Co., with several other printers and cotton-spinners, followed their example, because of the

increased demand for the article of Flax and tow-yarns, which continued to sell freely at double the price that it is just now.

As the public can only form a correct judgment on a subject that leads to discussion, by having the expressed opinions of both parties *placed before them*, I have thought proper (because of Mr. Stephen's complaints of misrepresentation of Mr. Beamish's quotations from his work) to insert his reply, and beg the reader to turn back to Mr. Beamish's remarks, and judge of the fact.

“DISCUSSION ON FLAX-CULTURE AT BALLINASLOE.—In the *Agricultural Gazette* of the 22nd of November, page 791, is a letter from Mr. J. H. Dickson, on the discussion of Flax-culture at Ballinasloe, in which my name is treated in a very unceremonious manner. Of fair criticism no author who writes for the public has a right to complain, but misrepresentations are unfair to every author. I am willing to believe that the misrepresentations of Mr. Dickson are not wilful; and yet he does not quote correctly from your number at page 744, to which he refers, and these quotations again are not accurately and fairly given from my book. As he, however, seems to write in earnest, I am also willing to believe him when he says that ‘I have not read the *Book of the Farm*,’ and I dare say he thinks the book the production of a mere theorist, and that I am a creature of ‘theoretical delusion.’ Now, what I would suggest to Mr. Dickson is this, to read my book, at least what is said in it on the subject which has given rise to his remarks, and to ascertain whether my sentiments on the effects of the growth of Flax on the soil are in accordance with the sentiments and experience of the Scottish farmers on that subject. If he do this, and afterwards adhere to the sentiments he has expressed towards me, both in the letter and the spirit, then I shall respect the position he has honestly taken up. And I also suggest that, should Mr. Dickson be in Edinburgh ere long, he will favour me with a

call, and judge for himself whether he or I know most of practical agriculture. Should he refuse to do either, then I must protest against his presumption in publicly criticising, in a rude manner, the works of a writer he has never read. Before concluding, it is necessary that I correct a typographical error which appears in my book. In mentioning the price of dressed Flax the error consisted in saying £6 per ton, whereas the price should have been £6 per cwt., or £120 per ton, the highest price usually given for Flax. This error is very obvious, for only a short way above I had stated the ordinary price of good Flax at £90 per ton. I should also mention that the facts adduced by me are [all derived from Scottish practice, and the amounts of produce derived are all given in imperial measures; but I presume that the quantities referred to by the Irish gentlemen are by the Irish acre, or perhaps by the Cunningham acre.

“HENRY STEPHEN.

“Redbrae Cottage, Edinburgh,
Nov. 25th, 1845.”

LETTER V.

DISCUSSION ON FLAX-CULTURE AT BALLINASLOE.

Having had occasion to visit Leeds in December, I could not, from press of business, reply to Mr. Stephen's charge of misrepresentation as early as I could wish, but when time permitted I made public the following reply:—

To the Editor of the “Gardener's Chronicle and Agricultural Gazette.”

“DEAR SIR,—I regret not having with me the number of your journal in which my article on the above subject appeared, in order to refer to it, and answer Mr. Stephen's remarks as to my having misrepresented any portion of his *Book of the Farm*. If by mistake I had done so, I should at

once apologise for committing such an error, as I should be sorry to give personal offence; but, as I said, I never read his work, although I sent to several shops in the city for it, and having only answered Mr. Beamish's quotations from it, I cannot imagine I have been incorrect in the meaning of any part of his statement. As it is now fifteen years since I parted with my last farm, and I know, from reading and conversing with farmers, there has been great improvement in agriculture, I at once confess Mr. Stephens may be practically a better agriculturist than I—that is, he may know how to grow beans, peas, and cabbages, and also turnips, and may be more skilful in directing the feeding of prize bullocks or sheep, because of my want of practice; but in order to inform the farmers of Great Britain and those in the county Cork, which his book was likely to do, respecting Flax-culture, and the advantages, or rather the disadvantages, which he says attend it, he should be prepared to tell them how many years experience he has had, in order that the public may believe that his writings are not theoretical, but worthy of reliance. He should tell them of his system of rotation of crops and the results, and how he proved it ruinous; also what quantity he had per acre, whether he had sown it for one year or ten? whether he had acres, or tried experiments in a garden. This I should look for before I could believe him practically acquainted with Flax-culture, because, from the first letter that I forwarded to your journal for insertion, I was as well prepared as I am now, with references to figures and practical farmers, to prove I was incapable of misrepresentation, and as to the sentiments and experience of Scottish farmers on Flax-growing, which Mr. Stephen allows to be his guide, compared with the dozens of practical results to farmers in the north of Ireland which I have often placed before you, under the teaching of the Belfast Improvement Society, and Professor Kane's clear and able lectures, I will allow the

number of tons of Flax,² and its price, produced IN ALL SCOTLAND, for the last five years, compared with the value of this year's crop in Ulster, £1,700,000, to decide whether the *Irish farmers* or the *Scottish farmers* should know most on the subject. Can Mr. Stephen inform me who of his countrymen have got 22s. per stone for Flax, or even the half, (11s.) this season? When he does so, I will admit the Scotch have equal pretensions with the Irish to claim being as competent to give their opinions from practice. If Mr. Beamish's quotations from the *Book of the Farm* be correct, I fear the author and those Scottish farmers have taken the same view that the Irish farmers did some few years ago, when they knew little about the proper course of management; they thought it ruinous, and had almost given it up. The seed in those days, with the water the Flax was steeped in, all flowed into the river; the seed, £8 per acre, and the Flax-water equal to liquid manure, were lost. I fear Mr. Stephen had this *old-fashioned system* before his eyes when he was writing down his observations on Flax; and although I give his countrymen credit for being much better farmers in general than even my own countrymen in the north of Ireland, nevertheless, I consider that province not inferior to any part he can select in all Scotland as regards Flax-growing; and I am glad to say that, without Scotch instruction, the farmers there have learned how to grow Flax that has been sold at £176 per ton in the Leeds market. I have been now connected many years with the trade, and I never heard of Scotch Flax being worth anything bordering on what I have quoted; in fact, I never knew more than two or three mills in Scotland to spin yarns much above 50 lea, therefore there was no encouragement to grow the article in Scotland, and it is only within the last few years that the fine spinners in this town would buy even the best Irish Flax. However, I hope the day is not far distant when Scotland, as well as England and Ireland, will be able

to keep a sufficient supply in this market, without our depending on foreigners for a raw material that we can produce equally as good, fine, and strong, if our farmers will only give it proper attention. We only want a few such men as Mr. M'Carten in England and Scotland to lead the way. I shall attend to Mr. Stephen's suggestions and shall have his *Book of the Farm* on my return; but before I do so, I can believe he is perfectly correct in saying that 'his sentiments on the effect of the growth of Flax are in accordance with the experience of Scottish farmers:' but as I can prove by experiments that Mr. S., having allowed these ideas to be his guide, has published opinions that are found to be in error (if Mr. Beamish's quotations are correct), I cannot see that he should take amiss my quoting practical men to prove that his teaching is erroneous. I noticed his remarks from a pure conviction that however valuable Mr. S's. work may be on other subjects (and I have been told it is so), the doctrine laid down on Flax-culture was the same as was believed in Ireland up to the last few years; and knowing from practice and the results of experiments made by practical men, that ideas so plainly stated in a work on agriculture would prevent experiments being tried, I did write "*in earnest*" and *will ever do so*, in opposition to anything likely to prevent the cultivation of Flax in Great Britain and Ireland; I believe I act as the farmer's friend, and the advocate and friend of the agricultural labouring classes, when I advise this country to produce what will keep her machinery going, in place of sending millions to the continent to support a people who tax our yarns and linens made from their own Flax, forty to sixty per cent., and quarrel amongst themselves about adding an additional duty.

"I am, dear Sir, yours truly,

"J. H. DICKSON.

"Bull and Mouth Hotel, Leeds,
20th December, 1845."

LETTER VI.

WHY NOT OURSELVES GROW THAT WHICH WE SPIN AND
MANUFACTURE.

To the Editor of the "Leeds Intelligencer."

"SIR,—I have frequently noticed articles in the public journals from anonymous writers, who no doubt wish as far as possible to promote the happiness of the working classes by some permanent—because self-acting—measure, rather than fall back upon the only remedy in law which involves the separation of families in union workhouses. To those benevolent-minded persons, the annexed paragraph, quoted from the *Belfast News Letters*, may appear worthy of their attention, if it has escaped their notice previously; and as it is there shown that 1A. 3R. 16P. of land (Irish measure) has been made to produce what gave constant employment to 217 persons for twelve months, at wages amounting to £2,217 6s. 8d. I must request these gentlemen who pride themselves in allowing their rich green valleys to remain scores of years *undrained and unploughed*, and who take delight in bringing to perfection at a heavy expense, the unfortunate animals that are annually exhibited at our Smithfield shows, to consider if there cannot be a change made in their system for their own benefit as well as that of the working classes. When such indisputable facts are brought before their eyes, I would, with submission, ask them whether *they*, by their practice, or *the grower of this Flax field* did most good for the country, for the benefit of the farmers whom they profess to enlighten, and for the working population? I beg of them to go into a minute calculation of the expenses of feeding to perfection one of those *over-fed animals*. Will the produce of three statute acres do it? Then compare the real value of the animal with the £30 prize and all added with the result of this Flax-field; and above all,

look at the employment it afforded to the working population where it was grown. I do not wish to offer a remark in depreciation of that in which gentlemen take an innocent pleasure, however much I may be disposed to think symmetry (and not an over quantum of fat) perfection; but in my opinion prizes should be offered to farmers to produce and bring to perfection what would be most profitable to themselves and the country, if smaller sums should be offered for what is more eye-sweet or fanciful. I am obliged to compare Flax-culture and cattle-feeding because one has been overlooked and condemned through prejudice, and the other appears to be the leading subject of prize-lists and competition. I have said so much through the public journals for the last twelve months, on the profits that farmers may derive from Flax-culture, that I shall now call the RICH LANDOWNER'S attention to the results where the article is cultivated and manufactured, and to the good feeling it is calculated to create between the agricultural and manufacturing classes of the community. I beg attention, therefore, to the following, which is from the *Belfast News Letters*:—‘An improved fabric made from the best qualities of home-grown Flax, denominated golden Flax, has gained the first prize both for cambric and cambric handkerchiefs, at the present November meeting of the Belfast Flax Improvement Society of Ireland. We notice this in connection with the following summary of facts detailed in the work by Dr. Kane, on the *Industrial Resources of Ireland*, which fully goes to prove the vast importance of this branch of our industry. We find it therein stated that near to Warrington, three statute acres of land produced no less a quantity than 100 stones of Flax, value £75; the produce of this field was sold to an eminent manufacturer in the neighbourhood (the very same that turned out the prize-web) for 15s. per stone; this Flax, in the process of converting into cambric pocket-handkerchiefs, will give constant employment

for twelve months to about 217 persons, whose wages amount to £2,217 6s. 8d.; add £75 for the Flax, you arrive at the value of £2,292 6s. 8d., the elements of which sprung from about 1A. 3R. 16P. of land, Irish measure, and the entire when furnished, will yield a very remunerating profit to the manufacturer.'

"Now, with proof such as this before the eyes of land-owners, that three statute acres can be made to pay and employ 217 people for a year, I do think it should arouse a feeling of desire for experiments in this country. If the operatives in one part of the three kingdoms are so alive to their interest in the production of this article, why have we not more of it here? We make glad the hearts of the French and the Belgians, and care nought for the many aching ones at home. Not only does the demand for fine continental Flax increase—the importation in 1842 being 55,113 tons; in 1843, 62,662 tons; and in 1844, 70,000 tons—but the price continues to advance, although Ireland produced one-fifth more in 1845 than she did in 1840; and now fine Irish Flax commands a market at enormous prices, in proof of which I shall here relate what I heard the other week from a gentleman in Manchester engaged in Flax-spinning. He told me that 180 stones of fine Flax had been bought in Derry at 15s. per stone, and brought to Tanderagee and sold at 20s. per stone, and from thence to Belfast, and sold to a firm (spinners in Lisburn) at 21s. 6d. As this is not a solitary instance, I think proper to notice it, because, in my opinion, there is not only an advantage in Flax-growing over all other crops that the land will produce, if attended to with skill, but the grower has *ten times* a better chance of gaining a prize than he whose time and capital are employed in what is termed 'bringing animals to perfection.'

"The Flax-grower who knows his business can tell, as he watches the progress of his crop, the extra profit he will have

over the same breadth of land sown in wheat, and *this is a certain prize* ; whilst the cattle feeder must take his chance, depending on the whim or caprice of the appointed judge, who may hand the £30 prize to his next door neighbour, which he *calculated* on obtaining in order to balance the extra expense of extra care and feeding.

In Flax-culture there is a wide field for the skilful farmer to employ his capital, *time, and extra attention* upon ; and he must see that, when we grow what we can manufacture, the operatives are thereby better able to be the consumers of his corn or cattle, and the money only changes hands, and is not transported to another kingdom. I do hope that the above statement may have the effect of drawing attention to what must (as the above proves) be for the real benefit of the agricultural interests of the country.

“If cotton could be produced in Lancashire, could it be supposed that landowners and farmers would be so blind to their own interest as not to grow cotton, and keep in the country the many millions sterling that the Americans draw annually from Manchester and the neighbourhood. I cannot believe so, for the spinners of cotton themselves would become farmers, sooner than overlook such advantages. Holding these opinions, I cannot but view the position of the landowners, farmers, and Flax-spinners in the same light, for the latter are at present sending their millions of gold annually to foreign farmers, which English landowners should by every means try to keep in this country.

“I am, dear Sir, yours very respectfully,

“J. HILL DICKSON.

“6, De Beauvoir Square, London,
10th February, 1846.”

LETTER VII.

MR. DICKSON'S FLAX MILLS BEING ERECTED IN WORKHOUSES.

Sir William Somerville, Bart., being M.P. in 1849, for Drogheda, a town where the good effects of the linen and Flax-trade adds much to the well-doing of the population, I thought well to draw his attention to my views on the question of erecting my Flax-machiney in the workhouses, then in my opinion, miscalled so; but as my letters and documents were, I suppose, thrown into the waste-basket with others on Irish affairs, I think it fair to Sir William to say my letter was acknowledged as follows:—

“ Sir William Somerville presents his compliments to Mr. Hill Dickson, and begs to return his thanks for the letter of the 7th instant., and the other documents which [accompanied it.

“ Irish Office, London,
13th February, 1849.”

I verily believe that Sir William would then (as chief Secretary for Ireland) have supported my views, but for the terror of the economists of the “ Manchester school,” for as money would be wanted, the Cobden and Bright parties and their satellites, would have made the Irish Office in London *too hot* for Sir William if he had countenanced my proposition—there is no denying the fact, for *no measure would they support* that would be likely to benefit landowners or farmers, by a relief from poor-rates or the reclamation of waste land. CHEAP BREAD, *low wages or half-time* for factory-hands, are the mottoes of the *Bright, peace-loving subjects* of our Beloved Sovereign Lady the Queen, and as cheap material in the shape of Wool or Flax cannot be now had, in January 1859, but on the contrary, the advance in price is more than one-third over that of the last

year, such have been the consequences that have followed the Bright peace-offerings of these peace *at-any-price* parties. However, we must now hope for *better legislation*, and that the views of all selfish agitators shall be so crushed as to prevent their *gloating once more* on thousands sterling collected from their manufacturing brethren. The end of such men *ever have been and ever will be*, as Pope has said:—

“When the tired glutton labours through a treat
He finds no relish in the sweetest meat.”

Richard's longing after the sweets of office has taken away *not only appetite*, but all invitations to parliamentary dinners; nothing but rustication can restore him, and as to his companion, who figured with others of the broad brim, and who, not unlike “O'Connell,” had many joints to his tail when he lead the *forlorn hope* to the Emperor of Russia—words on his career are almost superfluous. Even the “*Times*” considers him not altogether *compos mentis* during his late excursions to the north, after the trial he gave the *Birmingham gun-makers*; what a splendid representative of the interests of that branch of business! They should join the Sheffield *sword-makers*, and get John's fine figure cast out of the Crimean and Sebastopol cannons, and have it erected in the Town-hall in Birmingham.

Knowing the position of the injured landowners, as well as the distress of many of the farming classes in the south and west of Ireland, from the heavy tax imposed upon them towards the support of the poor in the union workhouses, where reproductive employment would be an everlasting blessing if properly introduced, inasmuch as if the inmates were once taught the art of cultivating and scutching Flax, they would be inclined to appreciate the advantages of it, and follow up the practice when free of the workhouse, and by that means the farmers would be completely initiated into the most profitable mode of working up their crops of Flax—I

wrote to Earl Clancarty, and received the following reply:—

“Garbally, Feb. 21st, 1849.

“SIR,—There can be no difference of opinion as to the benefit of having the population of a county employed, when possible, upon the manufacture of that which the soil produces, and it has been my anxious wish and endeavour to introduce the manufacture of Flax into this district, with the indispensable aid of machinery. Disappointed of finding at hand an adequate water-power to erect a mill for the purpose, the project is postponed until some arterial drainage (the drainage) in this neighbourhood, now above two years in course of preparation by the Board of Works, can be executed, by which the requisite mill-power would be obtained in the best intention. It might, however, if it does not involve much expense in the outset, be advantageous to establish a scutching mill, to be worked by manual labour at the workhouse, in place of carrying out, as is at present performed, the preparation of Flax by the paupers in the ordinary way, which is certainly defective. I should be glad to know from you, in order, if it should appear advisable, to bring the matter under the notice of the Board of Guardians of the Union, what would be the price of a Flax-mill to be worked by hand, and whether any and what expense beyond the price and erection of the machine would be required to enable the paupers properly to use it. The object of the guardians will be to prepare as much Flax as would give constant occupation in spinning to about 200 wheels.

“I am, Sir, your faithful servant,

“CLANCARTY.

“J. H. Dickson, Esq.,

Palmerston Place, Dublin.”

When his lordship wrote me on the subject I was unfortunately engaged in a Chancery suit in Dublin, which left me minus over £3,000, all of which remains as *unsettled*, now in 1864,

as it was in 1849, and having had nothing but *loss* of time and expense in Dublin, I returned home in 1851 with a view to finally finishing my mills to be worked by *hand, steam, or water-power*, and now I am, in 1864, prepared to supply his lordship with machinery that cannot be equalled in Ireland for the preparation of Flax, Hemp, or similar fibres for Flax-spinners purposes, and now that the Irish farmers, especially those in *Leinster, Munster and Connaught*, who have been induced to increase from 6,752 acres last year to 16,936 acres this year, 1864, it must be gratifying to the noble Earl to know that there can be *no mistake* in the fact, that an additional market for Flax is certain to be had in Lancashire for the additional supply over last year, if parties in Ireland will only persevere, as I have done, to make Flax become in a great measure a *substitute for cotton*; that it can be done I am *prepared to prove*, and it must be evident to every man that wishes to see Ireland prosperous, that at no time for the last fifty years has there been such an opening or such an opportunity as at this moment for drawing more closely the *two great interests* of the *two countries* together (the agricultural and the manufacturing) by the great connecting link of Flax, and as once it is properly introduced and spun on cotton machinery and the value of the superior article known, the slave grown cotton, unless for ladies dresses, can readily be dispensed with for every household purpose.

At a meeting of the Belfast Flax Society, presided over by the Marquis of Downshire, *the late Mr. James Brown*, of Donacloney, bleacher and manufacturer of damask and diaper, when alluding to a change in his views on the Flax subject, said—"When the late Lord Downshire called on him to solicit his co-operation and support of the society, his answer was that he would give it all the opposition in his power; as he then thought that to sow Flax the farmer would be only robbing his land. However, on mature

consideration, he found he had been wrong, and he at once joined the society, and he felt that, had the usefulness of this body been extended to Ulster sooner, and had a School of Design been in operation (and he hoped they would soon see such an institution there), those magnificent buildings which were to be seen erected on the most picturesque spots near our towns—beautiful on the outside, but within filled with paupers—these buildings, he was satisfied, would never have been necessary for Ulster. Then look at the number of people who, in emigrant vessels, left this place, whereas, under a proper system of things, they might be *profitably employed* on their own farms. He then referred to the linen trade of Ulster, and contrasted the condition of the people with that of those of *the South*. A landlord might safely reside in the north, receiving benefit himself, and doing good to others, instead of being, as he was elsewhere, always in dread of the assassin. If the people of the south had *the linen trade* established amongst them, there would be an immense field of employment opened to them, and great benefit conferred on them. He hoped to see the workhouses abolished altogether—[LORD DOWNSHIRE: ‘And TURNED INTO FLAX-MILLS.’]—and if this were done, and the people all usefully employed, all the landlords would be sure of their rents.” (Cheers.) There was no narrow-minded selfishness in Mr. Brown’s candid and truthful remarks; he well knew the advantages of producing what we manufacture, and wished to see the south and west of Ireland enjoy, as he did during life, prosperity, all of which arose from the linen trade alone.

Here the *worthy* MARQUIS wisely and with his usual thoughtfulness for the comforts of the poor, anticipated the use that could, and I trust may yet be made, of the buildings described by Mr. Browne, and as his lordship has been the first to hint the idea, it will not be unwelcome

news for him to learn that, without the expense of the steam-engine or water-power, my invention for preparing Flax and similar fibres, if introduced into the union workhouses to employ the inmates, is calculated to convert the establishments into what may be properly called NATIONAL FACTORIES, for, as there is nothing to prevent the *scutching* and *other machines* from being turned with ease *by hand*, in the same way as a winnowing machine or barn-fanners, I fearlessly assert that, through the aid of the workhouses of Ireland, instead of the barrier *against Flax-culture* being extended, can be *instantly removed*, and Ireland's waste lands may be made to supply the wants now greatly felt by British Flax-spinners, who are now paying *one-third more* in price for Flax than they paid last year (1857); however, I shall go into this matter at greater length hereafter, but before doing so, let me call the reader's attention to the advantages gained by one workhouse in Ireland, the report of which I took from the *Dublin Commercial Journal*, of January 20th, 1849:—

“A MODEL WORKHOUSE.—In the Ross Workhouse, Ireland, there are 200 wheels for spinning cotton, wool, and Flax, at which the women are engaged. There is also in it a large mill, which grinds five tons of Indian corn weekly. In July the workhouse was indebted £3,000. It has since not only paid off the debt, but has now £1,000 to its credit. In course of time a bakery and brewery will be erected there. The boys are taught agricultural and other industrial pursuits. By thus employing the paupers, they are encouraged to habits of industry and self-dependence.”

What greater proof do our Poor Law Commissioners require than this practical working out of my views?

The Reverend Doctor Edgar, D.D., of Belfast, being anxious to promote the cultivation of Flax in Connaught, recommends

the best system known to him in Belfast; unfortunately he has been led astray by the reports of the Belfast Flax Society's Committee, and as it has turned out that Watt's mill and process have been condemned and abandoned altogether in Belfast, is it now evident that either the committee appointed to inspect Watt's process were incapable of the work they undertook, before they made their report, or that Watt's managers or work-people had managed to deceive them as to the produce from the 10 cwt., 1 gr., 25 lbs., said to have been worked to produce 234 lbs. of fibres? I saw one of Leadbetter's partners here in Leeds, (where I am writing this, Dec. 1858,) at the Exhibition in September, and on showing him my samples of Flax, Hemp, and other fibres from India, and yarns and cloth made from each and all, and telling him I depended all, or nearly so, on the work done by machinery, he admitted that their affair in Belfast was a *dead failure*, and a great loss. In fact, Watt had nothing of machinery more than what has been worked forty years back; all he had new was the steaming process—hence the failure.

I visited the works at Lisburn in July, 1855, and saw nothing new but the steaming box or room, no machines but those of the old school of our grandfathers; such must account for the Rev. Doctor's visit to Connaught being useless up to this year, 1864.

LETTER VIII.

IF THE PEOPLE IN ULSTER ARE BENEFITTED BY CONNECTING THE MANUFACTURING WITH THE AGRICULTURAL INTEREST, WHY SHOULD THOSE IN THE OTHER THREE PROVINCES—LEINSTER, MUNSTER, AND CONNAUGHT—BE IDLE SPECTATORS.

*Memento probatum esse, Meo prestino more, Forti et
fidei nil difficile.*

To the Editor of the "Taum Herald."

"SIR,—It is now two years since I first made an attempt to draw the attention of the owners of property in the above-named province, to the importance of encouraging a more extended growth of Flax in this country, and the manufacture of the fibre into linens, in the hope of making (with the assistance of the press of Dublin) some converts to my views, feeling anxious to do in Ireland what I have since done in England, namely, to instruct, *gratis*, farmers who never grew the Flax-plant before, how to grow it equal to the best Belgian Flax. But, having received no encouragement from the landed proprietors of those provinces, who *now groan* under the burden of the Poor-law taxation, the evils of which they feel from being obliged to support in idleness the able-bodied poor, *who could and should work for their living*; and not having received more than two or three applications for information as to my [method of Flax-culture, and the various processes it must undergo before being made into linen cloth, I returned home to London, satisfied that the day was not far distant when those gentlemen would see their error, and that other observers of Ireland's wants, following in my steps, and convinced by personal experience, would publish those very truths, which I have been *for four years* continually urging

upon the British public, through their journals—truths, not taken from the writings of others, or collected, as in some instances has been the case, from a tour through the manufacturing districts of Ulster, but from many years residence, while giving employment to MEN, WOMEN AND CHILDREN, in the cultivation and preparation of Flax, and from having for several years (up to 1841) employed from ONE THOUSAND TO FIFTEEN HUNDRED and often TWO THOUSAND people in making *every description of LINEN GOODS*.

“Sir, I do hope that the move now made for the purpose of connecting manufactures with the agricultural productions of this country, may not (like many other good objects in Ireland) stop short through the want of propelling power. Unfortunately for this country, as Lord John Russell very justly observed, in his speech on the Poor Laws, early in 1849, there exists *no union (to repeal)* amongst those who *have the acres*; and consequently *no power* to do good, when matters that would permanently benefit the people are brought before them. However, it must now be obvious, unless the rising generation of the proprietary classes in Leinster, Munster, and Connaught, are educated to a better understanding of how to reward the industry and toil of their tenants and labourers, and also to know more of the business of the manufacturer and the merchant, the broad and *now poverty-stricken acres* of their forefathers will *not be inherited* by *their* children; for however degrading it might have been in the days of their ancestors, to be considered men of business, let them look on the position of our Rothschilds, Arkwrights, Peels, Marshalls, etc., and ask themselves, *how much of all Ireland could these men now purchase?* If they will but do this they must see that the *only way* to regenerate Ireland is to make it a manufacturing country, by working up, as far as possible, the raw material which may be drawn from its soil, its mines, etc.

“It has been said that ‘cleanliness is next to godliness.’

If this be true—and who shall gainsay it?—it is not to be expected that persons who have been reared in a filthy hovel, steeped to the lips in poverty and want, can know or appreciate the comforts that are enjoyed by the manufacturing people of Ulster, whose feeling and 'desire of independence, under kind and moral employers, make them at all times obedient to the law; and this I know from experience as the following facts will prove.

“Having been obliged, during the years 1838, '39, '40, and '41, frequently to visit the cottages occupied by our weavers, in the counties of Armagh, Antrim, Down, and Derry—for our house had them at work in *four counties*—I often remarked the air of greater neatness and comfort that pervaded the houses of those who had two or three looms at work, compared with the houses of those who had but one. The difference arose from the additional income derived from increased employment in weaving. The sons and daughters, as they grew up, were all taught to weave; and I knew many instances where, there not being looms sufficient for all, *the sons wove by night and the daughters by day*.

“Our best lawn-weavers in Lurgan were young girls and lads from sixteen to seventeen years of age; and I have known girls to earn from twelve to fifteen shillings per week, making for us 4-4ths linens in Ballymena, where our best weavers were young girls and boys.

“Now, sir, mark the good results of such employment, and this without the aid of BRITISH GOLD, for the industry and perseverance of the linen-manufacturers and bleachers in the north enable them to draw the HARD CASH from America, in payment for their productions. There is above £30,000 per week paid in the Ballymena market for linen goods by Messrs. Chain and Sons, Messrs. Gihon and Son, Messrs. J. and R. Young, and the Messrs. Carrells, and others; and three-fourths of all the cloths bought and made

in that quarter of the country, are sent to America by those great and enterprising firms, who receive gold in return. Therefore, the *woollen cloth shopkeeper, the grocer, the baker, the butcher and the farmer*, are all benefitted by the employment given to the WEAVER; and the landlord, Sir Robert Adair, is made as secure for the amount of his rent as if it were payable out of the Three-per-cents. It is, therefore, evident that, with the exception of the amount Sir Robert takes away to spend in London or elsewhere, the whole of the money that comes annually from America into Antrim for linen-cloth, finds its way, without obstruction, into the pockets of the industrious classes in that county. This has been proved by the fact that during the famine they were able not only to support themselves, but even to contribute towards the relief of the destitute in the south and west of Ireland.

“I regret to say that my efforts to make those facts more known in this country in 1846 and 1847, and my anxiety to place them before a class in Leinster, Munster, and Connaught, whose interest it would be to encourage, *at any sacrifice*, the manufacture of everything that can be produced from the soil, proved unsuccessful. I left Dublin in January 1847, and continued to keep the Flax-question—*the growth of the raw material*—before the British farmers and landowners. The result (as I shall prove in my next) has been most satisfactory. As the Royal Dublin Society has lately been favoured with the reading of an able document on the condition and resources of this country, written by M. J. Anketell, Esq., the opening question of which was, ‘CAN AGRICULTURE, WITHOUT MANUFACTURES, EMPLOY THE PEOPLE OF IRELAND?’ I cannot finish this letter in a way more likely to interest those who wish to see permanent improvement and employment carried out on just principles, than by quoting a speech delivered a

few days since at an agricultural meeting in England, by one of my patrons, T. H. S. Sotheron, Esq., M.P. for North Wilts—a gentleman who, WHETHER AS A LANDLORD OR AN EMPLOYER, may well be held up as an example to landlords in any country, as he is not the advocate for encouraging men to be at the expense of *draining farms, levelling bogs and ditches, and improving estates for others*, without being *certain of repayment*, no more than he would be an advocate for them to *build houses in this city on the property of others without a lease*.

“Mr. Sotheron said—‘Allow me in the first place, in responding to the toast you have just drank, to refer to the topic (right of the tenant) which has been brought before our notice by a friend occupying the position of a tenant-farmer, and now touched upon by Mr. Long. (Cheers.) A year ago, when the subject was rather more new amongst you, I took the opportunity of stating what were my opinions on the matter then. Since that time a committee was appointed for the purpose of taking evidence on this question. The chairman of that committee was a gentleman well known as a staunch friend to agriculture, and whose name cannot be mentioned in a meeting of agriculturists without that honour being done him to which he is justly entitled—I mean Mr. Pusey. (Applause.) Before that committee a vast amount of important evidence was adduced, and I do hope that those whose minds are not clearly made up on this question, will take the trouble to read that evidence. The main gist of it is—that it rests with the farmers themselves to secure that “right” which we all confess they ought to have awarded them.’ (Hear.)—[There is not a journal in Ireland but should hold up this worthy man, who spends £52,000 per annum of his income doing good in his county, as an example to the do-nothing owners of property that reside in England,

leaving their tenants to the tender mercies of agents, or receivers, who are, if not attorneys, the nominees of some of that race.]

“ ‘ We find, throughout the evidence, that Lincolnshire and Yorkshire are referred to as examples of the beneficial operation of tenant security; and I was most surprised to find that in Lincolnshire, thus set up as a model for our imitation, tenant-right dates no further back than the year 1813. Now, this is a proof of the facility with which the thing may be done; for, if in Lincolnshire they have in this short time achieved so much, it certainly can be no very hard thing for the farmers here, and elsewhere, to obtain what they desire, if they proceed in the same way as the farmers of that county. Especially might we hope to see it accomplished here, where we know that a most perfect cordiality exists between landlord and tenant, where we have such frequent opportunities of meeting together and expressing our opinions fully and freely, and where, I must say, I have never heard one sentiment uttered from which it could be gathered that the landlord does not wish to give to his tenant the fullest extent of his right, nor one demand expressed by the tenant which did not appear to me perfectly reasonable and just. (Cheers.) I say, therefore, that if you will only take the trouble to ascertain and define what it is you mean by “tenant-right,” I think there will be no difficulty in coming to a good understanding with each other. The real difficulty is to settle what amount shall be paid between the parties as compensation for their outlay. If, therefore, amongst yourselves, you will only adjust this question—if you will only settle by umpirage, upon a fair amount to be paid by your landlords, I am convinced that in this county you will find all that good which has been secured elsewhere by a similar course of proceeding, obtained also by yourselves with the most perfect goodwill of all parties. (Loud

cheers.) I have taken the liberty of saying so much on this subject, because I referred to it last year, and then recommended a similar course to that which I now propose. That course is, for the farmers themselves clearly to settle what ought to be done between the parties, to determine upon the fairest mode of doing it, and then, after the question has been fully canvassed throughout the country, to propose the course which they recommend at some such meeting as the present; when I think we can satisfactorily establish a system of “tenant right”—(though I do not exactly like that term)—as beneficial in its operation as that adopted in Lincolnshire. (Cheers.) It is very true, that you may, where the matter is left to the free agency of all parties, sometimes meet with a difficult person to deal with, and one perhaps, who will not agree to your wishes. But you will always find some such persons in every transaction. There are obstinate landlords, and tenants, and labourers. But these are the exception and not the rule; and when I see such an array of respectable men and of gentry as are now sitting at this table—and when, as yesterday, I see such an array of labourers all uniting together and respecting each other, I cannot doubt that what I say, as to material good feeling existing amongst us, will be considered by you not merely as a figure of speech to adorn an after-dinner address, but as expressive of that feeling which really does exist between all classes. That feeling, I doubt not, we shall soon carry home with us and use all our exertions towards carrying into operation. (Cheers.) You will pardon me if I take this opportunity of speaking on a matter of very inferior moment, it is true, to the last I have touched upon, but still one in which as you know, I have taken considerable interest—I mean the CULTIVATION OF FLAX. I hope I may be permitted to say two or three words on this subject, in the absence of Mr. Schomberg, who I am sure, would do it more fully and ably than myself, if he were

present. I have brought a specimen of the linen made from Flax, *grown, scutched, and spun on my own estate*, and which is a good specimen of home manufacture.' Mr. Sotheron then produced a napkin and various other small articles, which were of a very fine and superior quality. He then proceeded to give his own experience in the growth of Flax. The great question was, whether it answered to grow it or not. He had himself received such a return of nett profit from his own little crop—(he would not enter upon figures)—as to prove to his own satisfaction that though the great estimates they had at first formed of the profit to be derived had not been met, yet that it would *amply repay the farmer* who determined on growing it. There was one great advantage to be derived from its cultivation, namely, that they would be enabled to grow their own seed for the supply of their cattle; and as to the fibre, he should be quite ready to scutch it all for them at his mill, [*a Portable Mill for breaking and scutching Flax, Invented and Manufactured by Mr. J. Hill Dickson, Skinner Street, Bishopsgate, London, and erected and left in working order in three days, by two of his Millwrights,*] as he was now doing to a large quantity which had been sent him for that purpose, and the whole of which he would be very glad to buy. But the main point was that it would afford *a wide field for the employment of many around them*, who had often been without work during the months of winter. These persons were the less able-bodied of their labourers, the *old and infirm*, with the *women and children* who were obliged to stay at home during winter. He would, therefore, urge *upon all* to devote some of their land to this crop for the next season; and he would undertake to say that they would be able to spend a good deal in labour on their own farms beyond what they had yet done, and after all, to put *a good profit* into their *own pockets*. In conclusion, Mr. Sotheron thanked them for having drank his health and congratulated them on the

success of their meeting. This was the largest party he had ever seen collected together in that room, and he might almost say, that to-morrow his ribs would be black and blue in consequence of the pressure he had undergone from the large number of Members of Parliament and noble gentlemen who had been squeezed into that end of the room where he was sitting. (Loud cheers and laughter, amidst which the honourable gentleman sat down.)

“Now, Sir, here is an English landowner, not only willing but also able, as the result has proved, to elevate the working classes. At his own expense he has introduced manufactures into Wiltshire, and connected them with the agricultural interest of that county, where such a combination was as little thought of *four years ago*, as it now is in many parts of Ireland. And can it be said that he had any knowledge of spinning yarns from Flax, and of having it boiled, warped, and woven into linen cloth? No; but ‘where there’s a will there’s a way,’ and Mr. Sotheron needed not to be spurred on towards carrying out an object of such vast importance to the working classes of the county he represents; and as there is no way in the world of testing the charitable dispositions of men, so as to prove if they be sincere in their professions, equal to a *call on their purses*, Mr. Sotheron has proved himself in the sight of his constituents, worthy of the position he so *deservedly holds* in the county of Wilts.

“When those facts are brought before the eyes of the owners of property in Ireland, how can they say that they know of no way to employ the people who have *unfortunately* (?) been born on their estates? And these people are not by nature assassins, but kind-hearted and *full of gratitude* to those who would seek to improve their condition; and as to their honesty of disposition in general, I can only say, that had those in higher circles—the *Yankee merchants and the shippers of goods in Belfast*—behaved as honestly to me as did many hundreds

of weavers whom I some time since employed, I should never have had cause to complain of losses, or to give up the manufacture of linen goods in Ireland, for though during many years, I entrusted the linen-weavers of the North of Ireland with yarns to make into cloth, I never but once had occasion to bring one of their number before a magistrate for selling the yarn which I gave out to be woven, or for not returning it in proper time. I feel very great pleasure in stating *this fact* as I also did on reading his Excellency the Lord Lieutenant's opinion of the character of the Irish artists and tradespeople, as expressed by him the other day at the meeting of the Royal Dublin Society; and from my own experience in figured goods, damasks, and drills, I must say, that I fully concur in the estimate formed by Lord Clarendon, of the real aptitude of the people for learning anything taught them; for on my obtaining orders for goods from America and England, which were, if possible, generally accompanied with patterns and directions to make alterations in the design, I found amongst our weavers, many men endowed with superior intelligence, not only in connection with their own trade, but on business in general.

“If, then, the working classes deserve this character—and I, after an experience of ten years, during which I have employed them by hundreds, unhesitatingly assert that *they do deserve it from me*—if even one-fourth of them deserve this character, should they be allowed to live in huts unfit for pigs, without either door or window to lessen the miseries of such an habitation? They deserve better, and they have better in the north; and I can see nothing to prevent the owners of property in the south and west of Ireland from doing as Mr. Sotheron has done, and if they will only make up their minds on the subject—those who have escaped from the *iron grasp* of a set of men who have been the *ruin of this country*, namely, *usurers*

and *their co-partners*, who disgrace a profession that should be respectable *and respected*—they will find many, like myself, ready to give instructions *gratuitously* to their tenants.

“As some Irish landowners may not be aware of the large sums of money that are annually taken out of this country and Great Britain by foreign farmers, who purchase no productions of ours in exchange, for *Flax, Oil-cake, and Flax-seed*, I subjoin the following statistics, which, having been made up from government returns, may be relied upon. A glance at this table must convince any unprejudiced person that it is most desirable to stop so great a drain; and it is obvious that *that must and can only* be done by ploughing up the green and all *but useless* acres, sowing Flax, and giving profitable and permanent employment to the people. Let such work be commenced (as has been done by Mr. Sotheron) in earnest; and not only will thousands who are now in want outside the union workhouse earn an *honest livelihood* in preparing the ground for the sowing of Flax, and in the processes of *weeding, pulling, and watering the plant, &c.*, but those within the workhouse, who are consumers, and who produce nothing, could be made to scutch and prepare it for market, without being a burden or tax on the owners and occupiers of land in the parishes in which they were born; and farmers and their sons, who are now ignorant of Flax management, will learn the art, and also the manufacturing of linens, &c.

The total Importations of Flax in 1840 were 62,662 Tons.

„	„	„	1841	„	67,368	„
„	„	„	1842	„	55,113	„
„	„	„	1843	„	71,857	„
„	„	„	1844	„	79,174	„
„	„	„	1845	„	70,921	„

Total ... 407,095 Tons.

Thus, the Flax imports for the last six years gives an annuul average of 67,849 tons, which at the valuation quoted for 1840, will be about £67 per ton, or				£4,545,883	0	0
Add average annual imports of Flax-seed used for sowing and feeding, 616,000 quarters, valued at £4 per quarter (being 20s. per quarter under the price for some years past, in Ireland, for Flax-seed for sowing) ...				£2,464,000	0	0
Add average annual imports of Oil-cake 86,000 tons, valued at £9 per ton ...				774,000	0	0

It therefore appears we have been paying annually for Flax, Oil-cake, and Seed, for the last six years, on an average ... £7,783,883 0 0

“I am, Sir, your obedient servant,

“J. HILL DICKSON.

“Dublin, 1st Feb., 1850.”

“AGRICULTURE—FLAX CULTURE.

“The reader’s attention will be arrested by a letter from J. Hill Dickson, Esq., which we publish in another column of this day’s Journal. Bitterly do we deplore the unaccountable apathy prevailing in this poor district in reference to the subject treated by Mr. Dickson. We have repeatedly urged upon the landed-proprietors and farmers of this locality, the advantage and the necessity of uniting together for the purpose of directing the agricultural resources at our disposal, into a more profitable direction. It is true, we could not and did not expect, either from our gentry or farmers, the application of capital sufficient to make our farms compete with Belgium or the Mid-Lothians; for the simple reason, that we know full well they have not the means. We scarcely know one of our acquaintance who is in a position to spend

ten pounds per acre upon his holding or his farm. But if we could not do all, we could do much. By a judicious combination amongst ourselves and the expenditure of a moderate outlay in prizes and in furnishing instruction in various useful crops, with the culture of which we are at present unacquainted, a great advance could be obtained beyond our present situation.

“We talk much about protection to agriculture, but here is a crop in which, with all the advantages of the soil and climate and market upon our side, we permit an annual importation of Flax, seed, and oil-cake to no less an amount than £7,783,883 per annum. In other words, nearly eight millions a year in *hard cash*, for which little is taken in exchange, is paid by the mill-owners of this country for an article which could be grown at home with profit to the employer, and furnish the means of honest subsistence to our starving population.

“From the letter of Mr. Dickson, it seems ‘that in the small town of Ballymena, in the county of Antrim, £30,000 per week is paid for linen goods, by Messrs. Chain and Sons,’ etc. The contrast presented by this town—not much larger, if as large, as Tuam—is painful to contemplate.

“We beg to turn the attention of our readers to a serious consideration of the subject of our correspondent’s letter. It is a duty upon us to combine as one man, in taking measures for the cultivation of a crop so remunerative and so productive of industrial employment. If the Flax-crop be the rent-paying crop in other places, we see no reason why it should not become so in this neighbourhood.

“This course would be more judicious than, by seeking to return to impossible protection upon corn, throwing away time and energies which should be more profitably employed. The present letter of Mr. J. H. Dickson, putting forth the advantages of the Flax-crop so very clearly, induced us to defer until next week the publication of

the *Ninth Report of the Flax Improvement Society*, read at a meeting held a few weeks ago in Dublin. Although, we fear, Galway is doomed to stand almost alone in apathy, and that no efforts of the press will shake their slumbers here, yet we shall have the gratification of placing the value of an improved system of agriculture from time to time before their eyes.”—EDITOR’S REMARKS in the *Tuam Herald* December 29th, 1849.

LETTER IX.

RESULTS OF PRACTICE IN FLAX CULTURE *v.* PROFESSOR LOWE’S
THEORETICAL WRITINGS.

Verité sans peur; L’experience est la maitresse des faus.

To the Editor of the “Tuam Herald.”

“SIR,—Interested as you must be in the wide circulation of the *Herald*, and anxious as you must feel for the prosperity of trade and the interest of agriculture, for on such conditions depend the ability of your subscribers to discharge your annual demand, and as I think that anything likely to draw public attention will benefit these interests, *if published*, and again meet with your approval, I must therefore, without *ardenta verba*, solicit you to give this letter a place in your journal, as I think it is just in time to serve the agricultural and commercial interests of the country; but as my statements may be thought by surface readers *too highly coloured*, and *promising*, to such I say, *audi altrem partem* in dispute, from an extract taken from Professor Lowe’s writings, and published in the *Cork Constitution* newspaper, and judge for yourselves.

“Being favoured by a friend with a copy of the *Cork Constitution*, I was struck with an article in it, headed ‘Professor Lowe on Flax-cultivation;’ and as it appears the extract has been taken from a publication that is known

as *Professor Lowe's Appeal to the Common Sense of the Country*, and many may imagine the learned gentleman skilled in practice, as well as being *Homo prudentissimus ingino*, I have thought proper to notice his remarks, as I am inclined to think that I am one of the class aimed at by the fire discharged from the learned Professor's battery, which, no doubt, he calculates will tell like thunder on the feelings, if not on 'the common sense of the country'—he writes with *flumen ingenii*. I have read, more than once, Professor Lowe's remarks on the Flax subject, in the hope and expectation that time and research would so improve his ideas that he would, ere this, be enabled to explain to us how we might grow or produce the finer and more costly description of the plant, and thereby dispense with the Belgian, or the well-known fine and expensive article that we are obliged to import from Courtray, to make our CAMBRICS and LAWNS, and I am disappointed to find that he has not improved, nor is he likely to improve, so long as he imputes unworthy motives to those who would stimulate farmers to grow it, and prevent foreign farmers drawing from us (as I shall show by last year's returns, taken from the Board of Trade accounts now before me, per favour of the President) a sum such as I bring out as an average. I find the imports of the last two years are as follows:—

	1848.	1849.
Flax	65,779	83,825 tons
	(average cost, say £60 per ton.)	
Oil-cake	67,360	50,179 tons
	(average cost, say £8 per ton.)	
Flax-seed ...	683,506	469,603 qrs.
	(average cost, say £3 10s. per qr.)	

Importation of 1849, value ... £7,074,542

The general price of Flax is,—

Riga, £35 to £45 per ton.

Dutch £50 to £80 per ton.

Belgian £60 to £180 per ton.

Therefore, £60 is a fair average.

“As the imports for the last nine years do not show an average of more than 67,000 tons of Flax annually, the increase in 1849 is here evident, and is a proof that if the growing of wheat will not pay for tilling the waste lands in Ireland, the growing of Flax should not be overlooked, especially if we keep in recollection that five millions sterling worth of Flax, spun into yarns and woven into linen goods, would, in addition to giving permanent employment to *thousands*, if not *millions*, of the *working and starving classes*, bring into the country *twenty millions of gold annually*;—for example, what has made Belfast what it is, but the linen-trade of Ulster—or what is it that caused that flourishing town to double its population within the last fifteen years, but the great Flax-spinning factories of the Messrs. Herdmann and Co., and Mulholland and Co., who employ 3,500 people in their establishments? The professor should visit it, and be able to give more than *ipse dixit* evidence why Flax-cultivation should not be encouraged or recommended.

“However, in his work he tells us that—‘Another source of hope which has been supposed by some to be open to farmers, is by the raising of certain plants more profitable than those now cultivated, and especially lint (Flax) and hemp. Doubtless it may be well in certain cases to vary the objects of production; and lint and hemp are plants easily cultivated, and have frequently yielded good profits to the grower; but it must be remembered that we are subjected to the same kind of competition with productions of this class of plants as of those used for human

food. Hemp may be raised on the poorest class of soils, provided sufficient manures can be supplied, and Flax can be raised in unlimited quantity in the countries with which we carry on trade, from the north of Europe to the south of it, and all over the fertile continent of America.'

"Now, to use the professor's own words, every old woman who can remember that every farmer used to grow his own lint, knows this; therefore, there is nothing new in the professor's common sense teachings; but I say they do not know, in general, that it requires *great skill, energy and attention*, to produce the *finer quality* of Flax, and therefore the science requisite to be taught, by men entitled to have added to their names 'Professor of the Arts of Agriculture,' is the more to be desired, as this is a fact that cannot be disputed (as I shall prove before I conclude this letter), and as Professor Lowe appears to be incompetent to give any instruction on the subject, and is silly enough to condemn those who differ from him, and are practically acquainted with Flax-culture, and to impute to them 'a desire to deceive others,' I shall endeavour to brighten, if I do not enlighten, the Professor's understanding, not by such assertions as he has made, when he talks of the 'enormous bounties' that were given in England and Scotland (up to a few years back) to induce farmers to cultivate the crop, but by giving the names of successful cultivators of Flax, their residences, and the year they found their experiments to answer; and as the Professor in the following extract, studiously avoids telling the year in which the 'enormous bounties' were discontinued in England and Scotland, but merely says 'a few years back,' so that it might appear to have had government aid very lately. I now insist on him to name *the year* when such 'enormous bounties' ceased, and to say what was the amount of such bounties,

as *his* few years may mean twenty or fifty, whereas some might imagine them to be not more than five or six years. However, it is well known that the parliamentary grant that was given to encourage the Flax and Linen-trade in Ireland, was withdrawn in 1826—although a committee of the House of Commons reported that the faith of Great Britain had been pledged to this country for its continuance.

“After the professor informs the readers of his ‘common sense’ production, that ‘Flax can be grown in an unlimited quantity in the north and south of Europe and America,’ etc., another old lady’s story, he goes on to say:—‘If we are not then to lay a tax on these materials of important manufactures (which no one would think of doing) the foreign growers must possess the same market as ourselves—namely, our own; and we can no more contend with them in cheapness of production in these commodities than in any other produce of the land. Some speculative persons have been lately *amusing themselves and deceiving others*, with calculations of enormous profits, not less, it is believed, than £20 or £25 the acre to be got by producing Flax. It would be very easy to show those gentlemen that they have left out some of the most necessary elements of their calculation. But it must be pretty evident, one would think, that if a profit could be made of £20 or £25 the acre by raising Flax in England, the growers of Poland and other countries of the Baltic, who can raise it as well as we can, would not long leave us in possession of so profitable a monopoly. The Dutch will undertake to supply us with any quantity we choose to consume, and the Dutch farmers certainly do not make £20 or £25 an acre by cultivating lint.

“In England enormous bounties were in use, to be given to the farmers to induce them to cultivate lint, but the farmers continued obstinately to think they were paid better by cabbages and wheat. In Scotland the system of bounties

were continued up to within a few years back, and the bounties given were usually equal to several times the rent of the land. While the bounties were paid the Flax was produced, but the moment the bounties were withdrawn the production of Flax ceased along with them. Farmers are not usually so blind to their own interest as to require bounties to induce them to make great profits from their land; and the farmers of Ulster who have long continued to raise Flax after its production in England, have certainly not been making £20 or £25 an acre from any part of their farms.

“ ‘But the notion has again been spread that Irish agriculture is to be revived by extending the cultivation of lint, and the Irish farmers have been told that they will make £4 an acre by the seed alone. Linseed, along with other substances, is certainly an excellent food for animals, and should be more used than it is; but linseed can be obtained in any quantity we please from countries in which the growers would be pleased with a profit of £4 an acre, even though the Flax itself was burned; and if linseed be a good food for cattle, so are Swedish turnips and clover, the cultivation of which would do infinitely more to improve the agriculture of Ireland than if half the province of Ulster were employed in the production of Flax.’

‘Now, as the learned professor, in addition to his assertion respecting the ‘enormous bounties of a few years back,’ which I say, without fear of contradiction, is erroneous, continues to be sceptical as to the profits made by cultivating the Flax-fibre, and tells farmers they can have seed from foreign countries for £4 an acre, a civil hint that in his *superior judgment* they should send away *their cash* and *not grow* the crop. It will be evident that he is anxious they should be guided by the words of a poet of the old school, who says—

‘Be not the first by whom the new is tried,
Nor yet the last to lay the old aside.’

“However I shall bring forward a few experiments, statements from practical men, that will serve to shake the nerves and sceptical understanding of the professor, which statements at the same time must go far to upset his theory and assertion where he says (in his argument that £20 or £25 per acre could not be made)—‘It would be very easy to show these gentlemen (advocates of Flax-culture) that they have left out some of the most necessary elements of their calculation.’

“A tenant farmer, on Sir Robert Bateson’s property, near Mona, Mr. Hugh Dobbin, of Ballymagarahan, has just informed me that in 1848, he sowed nine bushels of Flax-seed on three Irish acres, which produced him 500 stooks of Flax when pulled, and after being pulled, he took one-half or 250 stooks to the pits he had prepared for steeping it in, and according to the old Irish system, (which I dare say is generally known in Scotland by the old women alluded to by Professor Lowe) Mr. Dobbin watered, grassed, and scutched, his 250 stooks; and the other 250 stooks he managed after the Belgian system. He kept an exact account of the outlay and profit of each system, the results of which were as follows:—

FLAX-CULTURE.

Dr.	£	s.	d.	Cr.	£	s.	d.
To rent of three Irish acres of land, including the taxes, ploughing, har- rowing, seed, rolling, weeding, pulling, water- ing, grassing, and scutching...	30	0	0	By first 250 stooks watered when pulled, seed <i>not</i> <i>saved</i> , produce when scutched 68 stones of Flax, sold at 7s. per stone.	23	16	0
„ Balance or profit on the growth of three Irish acres of Flax.....	59	4	0	„ Second 250 stooks kept <i>over</i> <i>year</i> , seed saved and produced four hogsheads and sold at £4 4s.	16	16	0
				Flax produced from same, 108 stone superior quality, which sold for 9s. per stone. ...	48	12	0
	£89	4	0		£89	4	0

“Mr. Dobbin had £59 clear profit on the three Irish acres, after allowing £10 per acre to cover all expenses, and would have had £16 16s. for seed, and £24 16s. for Flax, in all £41 12s. more profit, had he not been guided by the old Irish or Scotch system of watering it the year the Flax is pulled, but kept all his Flax to the following year. May I now ask Professor Lowe, after looking at the above statement, if he doubts the fact, or can he inform the British and Irish landowners and farmers (as many may still be disposed to

think him a competent instructor) what caused the last 250 stooks of Mr. Dobbin's Flax to be so much more valuable than the first 250 stooks? Waiting his reply, and being anxious that he may have an opportunity of consulting Professor Sir R. Kane's most valuable work on the *Industrial Resources of Ireland*, as in that book he will find the information that may suit his purpose, before he writes another *Appeal to the Common Sense of the Country*, I shall leave him to ruminate on the above facts, and add a few more accounts of experiments to show how ignorant he is of what *has been done*, or what *can be done* by the farmers of Ulster, when he so broadly asserts that, 'they have certainly not been making £20 or £25 an acre from any part of their farms.'

"At a meeting, last month, of the Belfast Flax Improvement Society, when a discussion took place on the merits of the new system of steeping Flax in warm water to decompose the woody part on which the fibre is produced, or dissolve the adhesive matter that causes the fibre to cling to the wood, one of the members, Mr. Borthwick, said that he was thoroughly convinced of the excellence of the system. He had sold his crop of Flax-straw grown near Carrickfergus, pulled and dried, to the company at Cregagh, getting £12 per Irish acre for it, which paid him better than any of his other crops. He had since been told by the purchasers that they were offered £8 *for the seed off an acre* of this Flax; and he had himself seen some of the fibre which they had steeped, and which was of such good quality as to be valued by the spinners at 63s. per cwt., or £93 per ton. It was producing from the straw at the rate of about 80 stones of 16 lbs. to the acre, which would be £28 worth of fibre, and adding £8 for the seed, the Irish acre would bring £36. He thought that was a conclusive proof of the benefit of the system.

"A sample of Flax grown in 1849, by Messrs. M'Carton and

Warrington, sent by Messrs. Dunbar, M'Master, and Dickson, of Gilford, who had bought it, was laid on the table, and the following extract of a letter from him was read to the meeting:—

“ ‘ I got 13s. per stone for what Flax I grew last year; one acre and a rood, Irish measure, produced me £32 10s.; I got the seed (Riga) from Messrs. J. Preston and Co. *My average price since I began to grow Flax under the direction of your Society—say the last five years—has been 24s. 5d. per stone.*’

“ It was stated by a member of the committee, that Mr. M'Carton's Flax had, one season, brought the high price of £150 per ton in Leeds, and was considered good value by the purchaser.

“ Having handed for insertion in your journal such statements from practical men, may I not now hope that those who read Professor Lowe's assertions respecting what has been done in Flax-culture by Ulster farmers, will now conclude that his assertions respecting what the Dutch will undertake to do for us, are as groundless as his ideas of the value of the Flax-crop to the Ulster farmers. However, as in another learned profession it is said, *Ignorantia non excusat legem*, his ignorance of the subject will have no excuse for his assumption, nor will it prevent my pen from exposing his erroneous teaching, or *lapsus linguae*, as I shall strictly adhere to *Lex talionis* whenever attempts are made to impute to me any improper motives—whilst I fearlessly and openly advise landowners and farmers to encourage the more extended cultivation of Flax, and the introduction of linen-manufactories in the south and west of Ireland, as such will be the true method and most profitable way of giving permanent employment to the people, for while they produce the raw material (Flax) in value of thousands sterling, if it be manufactured into linen goods for exportation it will, in

addition to giving employment to the working classes, bring back *millions sterling*.

“Such production will operate against the interest of a party, who care little what may *swamp the English* as well as *the Irish landowners and farmers in one mass of ruin*, in hope of gain—I mean those engaged in cotton manufactures, and known as the COTTON LORDS OF MANCHESTER; for who would wear a cotton shirt if fine linen comes lower in price (and a more extended cultivation of Flax would make it so), for *now* we can have *four linen shirts* for the price of *six cotton ones*, and the four linen shirts will outwear the six cotton ones. Therefore, as the small farmers holding from twenty to forty acres of land in Ulster could formerly, and up to the peace of 1815, pay their *year's rent* with the proceeds of from four to eight pieces of linen cloth, I cannot see why the same should not be encouraged by the landowners of Ireland in general, in opposition to the wear and export of an article we cannot produce (*cotton*), and for which *our gold must be sent in millions before we are at all benefitted*. I find, according to the statistics of the Linen Board in 1809, there were 76,749 acres sown in Flax, but Wakefield made the total 100,000 acres in that year, and valued it at £1,500,000. Drummond says that the acres sown in 1823 were 122,242, and that at Wakefield's estimate, yielded a produce worth £1,833,000 sterling. There was a considerable falling off from 1823 up to 1829 and 1830, when the first Flax-spinning mills were started in Belfast, and from that time the Belgian system of managing the Flax crop has been gradually extending itself, and as such proof as that we have from Mr. Dobbin and others in this letter, must be enough to satisfy Professor Lowe, and also the old women on whose wisdom he placed so much stress, that we live now in the days of progress, and must move along with the tides that

carry us to new pursuits and experiments; and as no intelligent man who has opportunities of forming a judgment can have the least doubt but we could add *three or four millions sterling* to the capital of our country by Flax-cultivation, without running the slightest risk of overstocking the market, and not only *double* but *treble* it, if we manufactured it into linen goods for exportation, it is to be hoped that the *landlord*, the *merchant* and the *farmer* will all take up the question, as it *affects them all*, because it is a *national question*, and must, as a consequence, benefit the majority of the people. Hoping you will give space to these remarks,

“I am, Sir, your obedient servant,

“J. HILL DICKSON.

“Palmerston Place, Dublin.

March, 1850.

“P.S.—After this, I hope Professor Lowe will not (like another professor, of hair-dressing notoriety, in Fenchurch Street, London) try to cut up Flax as close as Professor — shaves; for although the preparation of Flax is but imperfectly known in Cork, and Professor Lowe may imagine that the services of his old acquaintances (the old Scotch women) would be useful in the south of Ireland, I must beg to inform him, that we have still some Irishmen more apt and *sharp in practical undertakings* than either the professor or his old or young women, and Mr. Dobbin's farming and Flax-growing, and his preparing of it, proves the fact.”

“FLAX CULTURE.—MR. HILL DICKSON'S LETTER.

“We have not seen the lectures of Professor Lowe, on which Mr. Dickson passes such severe strictures. We, however, infer that the professor does not look upon the cultivation of Flax as so very profitable a branch of agriculture, as some other more sanguine advocates of the more extended

cultivation of that plant. Independently altogether of the statements contained in the letter of Mr. Dickson, which we publish in another column, we judge very much of the value of Flax to the farming classes of this country, by a reference to the prosperous state of Belfast, attributable chiefly to the employment given, in connection with the manufacture of linen. If the soil and climate of Ireland are as well, if not better, adapted to the growth of Flax, as those very countries from which such quantities are imported, why, we ask, do we not give this plant a place in our rotation? The prices which Flax will realize per acre, are higher than the returns from other crops. If we are rightly informed, the average price is from £7 to £9 10s. per acre; and in some cases, in favoured localities, some fetch £12 per acre. It should also be borne in mind, that these are the prices paid for Flax taken off the fields green, without any further trouble to the producer. Without entering therefore, at all, into the merits of the case as between Professor Lowe and Mr. Dickson, we are of opinion such prices are highly remunerative to the farmer.

“As far as we can see our way in the matter, we have no hesitation in strongly recommending an extensive cultivation of Flax, as the respective capacities of the soil will make it profitable. We must still continue to look upon it as a matter of great hardship, that nearly six millions sterling a year, should be drained from this country for the purchase of Flax, oil-cake, and seed, whilst our own soil and climate are so well adapted for the growth of the article, and whilst the market lies so near our own door.

“We recommend an attentive perusal of our correspondent's letter on this subject. The culture of Flax is every day assuming a more prominent position before the public mind. We need hardly repeat our great anxiety to see its cultivation extended in this locality.”—EDITOR of the *Tuam Herald*.

FLAX GROWING IN ENGLAND.

As I have had the pleasure of visiting Mr. Druce, and walked over his superiorly cultivated farm, and could not but admire the beautifully cultivated fields of *Flax*, which was the object of my visit to Oxfordshire; I have also equal pleasure in giving his account of the expense and profit in growing Flax on 5A. 2R. 6P.

The Right Hon. Sir James Graham, in his speech on this subject in Cumberland, stated that we wanted the produce of 200,000 acres for home consumption alone, and that our present growth in the United Kingdom did not exceed 150,000 acres annually, and that he would have the plant extensively cultivated in the coming season. The right hon. gentleman mentioned the difficulties of finding a market for the Flax-straw, but this obstacle would be entirely removed by the adoption of my processes. The growers may, *upon the formation of a company*, receive the average rate or price of £4 per ton for their sound Flax-straw when deprived of the seed, roots, and weeds.

Mr. Samuel Druce, of Ensham, stated to the council of the Royal Agricultural Society of England, on the 26th of February, 1851, the result of his experience in the growth of Flax in Oxfordshire, and particularly the result of his last year's crop, which he had drawn out for the information of the members, into a balance-sheet of expenditure in cultivation and realization by sale of produce; he thought this statement would satisfactorily show to them the value of the Flax crop, and the attention which, under present circumstances, it appeared to deserve. His property lay on the Oxford clay formation, and the piece of ground on which the trial of cultivation, to which he referred, was made,

consisted of a deep red loam, and in extent was 5A. 2R. 6P.

	£	s.	d.
Rent of land at 48s. per acre	13	14	0
Taxes, at 6s. per acre	1	14	4
Flax-seed, 13½ bushels, at 9s.	6	1	6
One ploughing, at 10s. per acre	2	17	3
Sowing and harrowing, at 1s. 6d. do.	0	8	0
Weeding, at 2s. per acre	0	11	5
Pulling Flax, at 14s. per acre	4	0	1
Carting and stacking, at 4s. per acre	1	2	10
Thrashing	5	7	1
Winnowing.	0	12	6
	£36	9	0

SALE OF PRODUCE.

	£	s.	d.
Sale of Flax-seed, 116¼ bushels at 8s.	46	10	0
Sale of Flax-straw, 12 tons, 2 cwt. 2 qrs., at £3 per ton	36	7	6
Sale of Chaff, at 5s. per acre.	1	8	7
	£84	6	1

Leaving a nett profit of £47 17s. 1d. on the 5A. 2R. 6P., or a trifle more than 5½ acres of land employed in this trial of Flax-cultivation; and Mr. Druce concludes by expressing his conviction that *Flax is not at all an exhausting crop*.

Here then, is the expressed opinion of a gentleman, one of the most extensive and practical agriculturists in England; let those theorists who write books like Mr. Stephens and make speeches like Professor Lowe look at this, and confess

that they have everything to learn on the Flax question, and that to study for a season under Professor Druce at Ensham, would greatly benefit them.

November, 1864.—Having written to Mr. Druce a few weeks ago to inform him of my new invention for *cottonizing Flax*, I had the satisfaction to know he still continues to grow the crop *largely*, although his method of preparing the fibre for market is still very *imperfect* and *expensive*, however, I shall select him as one of the first to have one of my latest improved machines, in order to open up fresh ground by the introduction of a better and more profitable mode of working, with a view to avoid by early attention the awful consequences predicted (from the “Flax movement in Ireland,”) by the assumed knowledge and warning on the part of the Editor of the *Standard* newspaper,—I hope to show him as I did the Editor of the *Mark Lane Express*, some years ago, that he has touched on a subject that he requires to know *more of* before he writes again, like Professor Lowe, on its condemnation.

THE EDITOR OF THE LONDON *STANDARD*, v. THE
INCREASE OF FLAX-CULTURE IN IRELAND.

Without going to Ulster farmers or Flax-growers to prove that the statements of the *Standard* are not to be relied on, as they have no foundation, in fact, I think the profits so clearly brought out by Mr. Druce on the cultivation of 5A. 2R. 6P. of land with Flax, by selling his Flax-straw at the low price of £3 per ton, which shows that £47 17s. 1d. was realized, proves error No. 1. on the part of the *Standard*; but suppose Mr. Druce had scutched his 12 tons of Flax-straw, his produce should have been, taking the average yield of $1\frac{1}{2}$ tons of fibre, say at £70 per ton £105 0 0
Deduct scutching, carting, etc. ... £18 0 0
and the 12 tons straw 36 7 6

54 7 6

Balance £50 12 6

By this mode of going to work, as Ulster farmers do, Mr. Druce would have had £98 9s. 7d. clear profit by making his Flax-straw into fibre for the spinner; and this profit on five acres the *Standard* thinks should not be encouraged, especially in Ireland. As this is close on £20 per acre profit, the facts speak for themselves; seeing that Mr. Druce sold £46 worth of seed, and the cost of produce was only £36, including rent of land at £2 4s. per acre,—rather a smart rent.

It seems strange that any man possessing a knowledge of, and having the great privilege to write on Irish affairs in a leading journal such as the *Standard*, should commit so great a blunder as to write so discouragingly on a subject which so deeply concerns the south and western provinces of Ireland, when it is universally known that the cultivation of Flax and the increase of the linen trade in Ulster have been the chief

causes of the prosperity of the province, compared with the other three provinces. One would suppose the writer to be a partner in Barclay's firm, or in the London Brewery Company, whose great demand for barley makes them delight in seeing so fine a harvest as this of 1864 has been. The currier thought nothing was like leather; but the writer in the *Standard* seems to think that nothing is like barley. Wherever good Flax can be grown, prime malting barley can be produced; but as newspaper writers are not infallible teachers, I leave the profits on Flax-culture to be confirmed by such practical gentlemen farmers as Mr. Druce, who would not lend themselves to the "fabulous" statements supposed by the writer in the *Standard*.

Error No. 2 of the anonymous writer is this:—"The crop was once extensively grown, but has ceased to be cultivated, because it was found to be no longer remunerative." I challenge him to prove this to have been the case in Ulster since the first mill was built in Belfast, in 1829, by Messrs. T. and A. Mulholland. There was a falling off in Flax-culture and in the linen trade of Ireland, from the peace in 1815, as from that time the Leeds Flax Mills sprang up, and spun nothing but the best Dutch and Flemish Flax, and the linen trade gradually decayed, but the Messrs. Mulholland put a stop to that by their spirited enterprise, and they and their partners, Hind, Herdman and Co., deserve the credit of having saved the linen trade as the staple of the country. As to the cause of the diminution of Flax-culture from 1851 to 1858, it is evident the writer is perfectly ignorant. The Russian war caused such a rise on grain crops that farmers turned to grain in place of Flax; but the wet seasons in Ireland were the *chief cause*, for the price was as low last year as ever I recollect it for the last forty years, and I have been all that time interested and connected with the Flax trade as a *mill-owner* and *agent*.

Error No. 3, where he says :—“The linen trade of Ulster cannot be largely increased because the produce of its looms is only suitable for the wealthy,” and that “It is not likely the fine linen trade, the only branch now possible to be carried on with success, can ever acquire such extension as would force the manufacturers to seek supplies of the raw material beyond the limits of the province in which it is established.” Any man who has looked at our importation of foreign Flax, which increases yearly, without going back to the money the Belfast Flax Society spent for years to force the south and western provinces to increase Flax *for their use*, must laugh at the absurd and truly ridiculous remarks of the writer, who will be treated as *non compos mentis* by every grower, spinner, manufacturer, and bleacher of linen cloth in Ireland, as it is well known that in 1848, when the average of five years’ importation of foreign Flax was 68,879 tons, Mr. Mulholland of Belfast told the farmers at the Belfast Flax Society’s annual dinner, that of the £50,000 which he annually sent out of the country for Flax, he would not have occasion to send that year £40 from home for a supply, although it was HIGHER IN PRICE *then*, than *it is now*.

In the face of such authority as Mr. Mulholland, the largest consumer of Flax in Europe, the FATHER OF THE TRADE, may I not ask (when the writer talks of the supply being limited to the province in which it is established), what could possess him to write such nonsense, and in the face of the market reports of Flax and linen weekly? I am at a loss to conceive; but as such dictation might injure a cause that promises such success, now that the southern and western owners of property are determined not to depend alone on government aid or promises made to deputations that all end in smoke, I, as a practical maker of linen cloth, ask those who have read the *Standard’s* remarks, to turn to my tables of instructions at pages 78 to 80 in this work, and judge for themselves:

when they compare the cost price of a 16^{oo} linen at 11d. per yard by the old Irish system, and a 16^{oo} linen by my system from bleached Flax at 9d. per yard, let such goods be compared with cotton cloth at the *same price*, and any person of ordinary intellect will pronounce the linen five-and-twenty per cent more valuable in appearance as well as strength.

Added to the above advantages, the material will be found fine enough for any gentleman in the land, and the best cloth (or set, as it is called by the trade) for shirts. As the writer concludes by connecting the establishment to which he belongs with his denunciations, when he says, "We would not be understood as discouraging the growth of Flax within such limits as may render the speculation remunerative," I tell him Flax-culture is no speculation, no more than wheat, and I tell him more, the Irish farmers do not require to be told by him *what they want*, because they all know by his remarks he is, *to all intents and purposes*, as incompetent to give any advice on the subject, as he has shown himself totally ignorant of the history of the trade, and as I have now before me an article from the *Standard* in 1850, I intend, with such^a proof in my hands, to let the writer see, and also feel, that if it was fair to call a leading journal by the name of the *City Barometer*, when the editor tried to turn the country against the great and *now successful* gathering of the Royal Agricultural Society of England, whose rewards have made farming, through the use of machinery, as much an art as the weaving of a piece of velvet, that the *Standard's* articles now before me entitles it to be called *City Barometer No. 2*.

In the building of any of our great national institutions, such as the Houses of Parliament, the British Museum, and such like undertakings, a prudent builder takes care to have the best stone, timber, and iron at hand, as an argument that from such material his work may stand the *test of time*

and the thunders of the press, and as I benefit in my Flax movements by having always at hand similar evidence that the march of progress supports my views, it is with satisfaction and no small degree of delight, I place before the reader the very large increase in the export of our linen yarns and linen manufactures over that of the nine months ending September 30th, 1863,—£2,082,182—and as two-thirds of the exports must have left Ireland, a country that has no WOOLLEN, SILK, or COTTON manufactures, COAL or IRON TO EXPORT, is it fair, when one looks at the exports, to find the press lend itself in opposition to Irish landowners, to the cotton trade of Lancashire, and also in opposition to the *only article* of manufacture Ireland enjoys, and to try by false doctrine to prevent Irish landowners to increase the only article that can elevate their country, by exportation; but as I have a word in store for the *Standard*, from the doctrine of Swift, which he once called on the people of Ireland, to attend to, as one of the “greatest and wisest men and truest patriots known to modern history,” I bide my time, and call the reader’s attention to the following statement, as regards the success of the linen trade of the country as a rival of cotton goods, for home or export purposes.

BRITISH EXPORTS.

“The aggregate value of British produce and manufactures shipped from the United Kingdom to foreign and colonial ports, in the nine months ended 30th of September of the present year, amounted in round numbers to $123\frac{1}{2}$ millions sterling; compared with the returns for the same period in 1863, such sum exhibits an increase of more than nineteen millions, and with those for the first nine months in 1862 of almost thirty millions. Of

the twenty-five principal headings which constitute results of such wonderful magnitude, not more than three show decreases worthy of notice, and these are apparel and slops, £134,792; arms, ammunition, &c., £452,148; copper and brass, £394,858. Taken altogether the fallings-off do not reach a million, while the increase exceeds twenty millions.

“Cotton manufactures and cotton yarn contribute towards that increasement a little more than a moiety; linen manufactures and linen yarn upwards of two millions; woollen manufactures and woollen yarn as much as four-and-a-half millions. The commodities which have helped most largely to make up the remaining three-and-a-half millions are: Coals, to the extent of ^{part} £332,337; haberdashery, £662,271; hardwares and cutlery, £411,874; machinery, £332,450; iron and steel goods, £717,194; and oil-seed, £200,210. In the subjoined table the values of all the most prominent articles of British produce and manufacture exported in the nine months ended September 30th of the past and present years, together with their respective increases or decreases, are particularised:—

NINE MONTHS ENDED SEPTEMBER 30TH.

	1863.	1864.	Increase.	Decrease.
Alkali, Soda . . .	£666,393	£685,914	£19,521	—
Apparel and Slops . .	1,935,433	1,800,641	—	£134,792
Arms, Ammunition, &c.	1,189,890	737,742	—	452,148
Beer and Ale . . .	1,283,112	1,213,346	—	1,766
Coals	2,767,875	3,100,212	332,337	—
Cotton yarn	5,463,251	7,277,892	1,814,641	—
Cotton manufactures .	27,192,014	35,647,480	8,455,466	—
Earthenware, &c. . .	983,048	1,062,054	79,006	—
Glass of all kinds . .	554,643	558,094	3,451	—
Haberdashery, &c. . .	3,131,136	3,793,407	662,271	—
Hardwares and cutlery .	2,669,495	3,081,369	411,874	—
Leather manufactures .	1,360,926	1,475,700	114,774	—
Linen yarn	1,773,682	2,386,849	613,167	—
Linen manufactures . .	4,554,203	6,123,218	1,469,015	—
Machinery	3,030,603	3,363,053	332,450	—
Iron and steel	9,676,206	10,933,400	717,194	—
Copper and brass . . .	3,071,939	2,677,081	—	394,858
Lead	608,822	605,102	—	3,720
Tin	361,745	379,966	18,221	—
Tin plates	973,897	1,033,133	59,236	—
Oil seed	716,214	916,424	200,210	—
Silk manufactures . . .	1,088,468	1,156,593	68,125	—
Woollen yarn	3,702,226	4,213,834	511,608	—
Woollen manufactures .	10,973,219	14,914,744	4,041,525	—
All other articles . . .	14,564,273	14,736,913	172,640	—
Totals	£104,294,713	123,404,161	20,096,732	987,284
			987,284	

Increase in 1864 £19,109,448

Having left unnoticed the *Standard's* views on the saving of Flax-seed, and 'Flax as the most impoverishing crop sown,' I refer the reader to Sir Robert Kane's practical experiments, as noticed in this work, to upset such theoretical assertions, and I must beg the reader's attention to the returns that I have procured, to show the progress of Flax this year, 1864, over that of last, a matter that must please every man who wishes to see Ireland prosper.

AGRICULTURAL STATISTICS, IRELAND, 1864.

“Return showing, in statute acres, the extent under Flax in each county in 1863 and 1864,” compiled from returns obtained by the constabulary and metropolitan police, who act as enumerators :—

Counties and Provinces.	Extent of l and under Flax.		Difference between 1863 and 1864/	
	1863	1864	Increase.	decrease.
ULSTER.				
Antrim	Acres. 21576	Acres. 34847	Acres. 13271	Acres. —
Armagh	24001	31673	7672	—
Cavan	10260	15924	5664	—
Donegal	24132	29645	5513	—
Down	44963	59137	14174	—
Fermanagh	4482	7494	3012	—
Londonderry	25872	32734	6862	—
Monaghan	20054	25486	5432	—
Tyrone	32007	41314	9307	—
Total of Ulster	207347	278254	70907 acres Increase in 1864.	
MUNSTER.				
Clare	586	1412	826	—
Cork	663	2039	2276	—
Kerry	378	1236	858	—
Limerick	190	773	583	—
Tipperary	327	1003	676	—
Waterford	38	257	219	—
Total of Munster	2182	7620	5,438 acres Increase in 1864.	
LEINSTER.				
Carlow	12	81	69	—
Dublin	1	31	30	—
Kildare	7	19	12	—
Kilkenny	50	270	220	—
King's County	335	786	451	—
Longford	406	1704	1298	—
Louth	702	2541	1839	—
Meath	325	882	557	—
Queen's County	63	268	205	—
Westmeath	159	595	436	—
Wexford	34	200	166	—
Wicklow	4	6	2	—
Total of Leinster	2098	7383	52,85 acres Increase in 1864.	
CONNAUGHT.				
Galway	300	1537	1027	—
Leitrim	887	2226	1339	—
Mayo	696	2086	1390	—
Roscommon	330	1590	1260	—
Sligo	259	1246	987	—
Total of Connaught	2472	8685	6,213 acres Increase in 1864.	

“Total acreage under Flax in Ireland in 1863 and 1864—1863, 214,099 acres; 1864, 301,942 acres. Total increase in 1864, 87,843 acres.

“Extent of Flax grown in Ireland in each of the following years:—1851, 140,536 acres; 1852, 137,008 acres; 1853, 174,579 acres; 1854, 151,403 acres; 1855, 97,075 acres; 1856, 106,311; 1857, 97,721; 1858, 91,646 acres; 1859, 136,282 acres; 1860, 128,595 acres; 1861, 147,957 acres; 1862, 150,070 acres; 1863, 214,099 acres; 1864, 301,942 acres.

“The foregoing return, which exhibits an increase of the area under Flax in every county, is published, as in previous years, in anticipation of the general abstracts, which will show the acreage under the various crops, and the number of live stock, by counties and provinces. They will, I trust, be ready for publication in the course of the ensuing month, I do not apprehend that any difference of importance will be found between the acreage under Flax here given and that which will appear in the detailed tables of the general abstracts now in course of compilation.

“WM. DONELLY, Registrar-General,

“Agricultural and Emigration Statistics Office,

“5, Henrietta Street, Dublin, 8th August, 1864.”

“ARMAGH FLAX AND LINEN MARKETS.—There was a good supply of new Flax at market on Tuesday—say about three tons; but, with the exception of two or three small lots, the quality was inferior. Still the price was well maintained, mill-scutched ranging from 7s. 6d. to 10s. per stone, and hand-scutched from 7s. to 7s. 9d. The supply of old was estimated at fifteen tons, and the buying was active, mill-scutched realizing from 8s. to 8s. 9d. per stone, and hand-scutched 7s. to 7s. 9d. The linen market was an average as to quantity, but there were fewer buyers than on that day week, and they acted cautiously, anxious for a

reduction of rates, to which holders refused to submit.'

As there is a total increase of 87,843 acres of Flax this year over that of last, and the prices are 1s. per stone higher than last year for hand-scutched Flax, as it sold at 5s. 9d. the year round; why should the *Standard* advise and discourage the owners of Irish property, especially those who are living in London, who may, being absentees believe in its warning voice, that the demand must end even before the war in America, (which has caused cotton to get up to such an exorbitant price as that of 2s. to 2s. 8d. per lb., in place of 6d. to 8d.), has any appearance of being brought to an end. The *delusion* and want of knowledge on the part of the writer, respecting the increased demand for Irish linen cloth for the last three years, and also the increased demand for Dundee linens, even the coarse article of manufacture which has so increased the wealth of spinners and manufacturers, must only account for such stupid denunciations of the Flax movement in Ireland, a movement made by the people in the provinces of Munster, Leinster, and Connaught, which has caused them to grow 16,936 acres this year, in place of growing, as they did last year, 6,752 acres. The writer has been blind to the fact, that want of mills in these provinces caused the farmers to regret the growing of Flax, and no man would speculate in building mills, or go to the expense of erecting machinery, until there was a certainty of a supply of Flax to employ their mills and machinery, but now they have been stirred up by the fact of the linen trade of Ulster coming more and more into competition again with cotton, and hearing of the continued prosperity of Ulster farmers by growing Flax, which even at the low price of 5d. to 6d. per lb. has paid them better than a crop of oats. As the best Flax has been latterly produced after a crop of *wheat* or *barley*, they have ventured to *treble* their former growing, and now that there really is a stock

of Flax to work up, mills are in course of building, and machinery will be erected, and as a consequence, those who have built the mills must encourage the farmers to continue the good work of producing what will pay them, and give employment to the working classes in the winter season, when out-door work cannot be done; under such circumstances, is it not a crime on the part of any influential journal to try by all the force of argument, without the shadow of foundation in *justice* or *truth* to support such opinions, to send forth such a warning as the *Standard* has issued, as if it were the only guardian angel of Ireland, and saying "that we depreciate its too universal production before the demand for it is based on a solid foundation." Every man that looks back at the returns must see, that the writer might just as well tell the fishermen on the coast not to catch any more fish, as he deprecated the production until he ascertained the demand.

Before I finish, and as I look back to the writer's assertion of "fabulous profits," and the Flax crop, "ceased to be cultivated because it was found to be no longer remunerative," I have cut out from the *Armagh Guardian* the following:—

"**LARGE PRODUCE OF FLAX.**—Mr. George Hobson, of Ballyhagan, in this county, sold to Mr. Micheal Reilly, in our market on Tuesday last, the produce of six bushels of Flax-seed, grown on three English acres, thirty-five stones to each bushel, at 10s. 4½d. per stone. The seed was bought from Mr. Jacob Halliday, Belfast, and the Flax scutched at Mr. John Walker Redmond's mill. The produce of the three acres realized above ONE HUNDRED GUINEAS."

If the above be not sufficient to prove that my argument in upsetting the writer's remarks, and that what I say, "is based on a solid foundation," I must leave the reader to form his own judgment.

Having finished my arguments on Irish Flax as a substitute for cotton-spinner's purposes, I must solicit the reader to peruse the following, as it will be satisfactory to see that one of England's most successful merchants, the late Sir W. Brown, Bart., Liverpool, so countenanced my movements as to give me liberty of referring to him.

ADVANTAGES TO BE GAINED BY THE INTRODUCTION OF RHEEA FIBRE, FLAX AND HEMP AS ADDITIONAL MATERIAL, ADAPTED TO COTTON-SPINNING MACHINERY.

Having proved my ability to make not only Rheea fibre, but any other flexible fibre, *soft, fine, and short enough* to be spun on *cotton machinery*, and through the aid of the firm of Messrs. Birley, Brothers, cotton spinners, Preston, proved that such yarn can be spun from my prepared fibres, I shall briefly point out and call attention to the importance of such material at this crisis, and the two-fold advantage of such being introduced into the cotton spinning and manufacturing mills of Lancashire, a matter thoroughly national.

First, the economy in cost of the material compared with cotton, and seeing from my calculation that Rheea and such fibres as I have prepared are not at all likely to average more than from 5½d. to 8d. per lb., I reckon the material such as the No. 20 yarns spun from as follows :—

Suppose 2-3 or 10lb. of Rheea fibre cost 5d. per lb.	0	4	2
Do. 1-3 or 5lb. of Surat cotton cost 15d. per lb.	0	6	3
Total 15lbs., mixed in carding, average 8½d. per lb.	0	10	5

By such mixture 6½d. per lb. would be the saving by using Rheea, and a stronger article produced; but suppose it all Rheea, at 5d or cost 6s. 3d., the saving would be 10d. per lb., and better warp yarn for heavy cloth, as it will bear the strain necessary for the weft being driven up tightly.

Secondly, and the most important, is the unquestionable

certainly of a supply in Europe and our colonies, independent of America, as with our supply of cotton from India, Egypt, &c., &c., we could keep our spindles and looms at work, by the introduction of my prepared fibres into sheeting, shirtings, &c., if we never imported a bale of American cotton; and as thousands of tons of the material can be had in from one to three months to give employment to the praiseworthy but distressed operatives, who no doubt would sooner work for half the former wages, at this moment, than become degraded by having their names enrolled on the lists of mendicants, the question is, is not this the time to try and revolutionize the manufactures of Lancashire, and by such additional material crush the supremacy of cotton as an only article to depend on. I have the opinion of one of the most extensive merchants in Liverpool, Mr. W. Brown (after seeing my specimens), in favour of such views, and liberty to refer to that eminent gentleman on my calling and explaining my mission to Liverpool.

The late Sir William Brown's note of invitation to call on him was before I had my material spun on cotton machinery, and he told me he had just heard, that cotton spinners in the United States of America had been trying with success to spin the wild Flax of the prairies on their cotton machinery, and added, if I succeeded in having my prepared Rheea, Flax, and Hemp, and such fibres as I showed him spun on cotton machinery, I should lay a foundation by the introduction of such material which must revolutionize the trade of Lancashire, and as such were his views, I might make use of his name and expressed opinion on the subject, if it would be of any service in the object I had in view of forming a company, as owing to his advanced age and being retired from business, he could not do more than answer letters, which he would be happy to do in my favour, and on parting wished me success. On my return

to town I sent his (the late Sir W. Brown's) letter to Earl Russell, and I have now written to have it returned, as he sent it to the Manchester Chamber of Commerce.

Being invited by the firm of Messrs. Birley, Brothers, cotton spinners, in Preston, who are also Flax spinners in Kirkham (for whom I was agent in Belfast for many years, up to my leaving in 1842 for London), to have my material tried at their works, and having spent nearly three months in that quarter, I at last saw my way to success in their mills, and also in the mills of Mr. W. Paley, where I had French *Hemp* and *Flax* from *green unretted* straw into a sliver, as perfect as any cotton could be made, and as I had a considerable quantity of Rheea spun by the Messrs. Birley, I left for Liverpool in October, and the following week had 100 spools of yarn sent me, with the letter as follows:—

“Hanover Street Cotton Mills,

“Preston, Nov. 4th, 1862.

“DEAR SIR,—We duly received your letter this morning; no one being at the mills to-day, we merely send you the yarn we have spun as requested. There are two bundles, the one contains yarn made from half cotton, half Rheea, the other from two-thirds cotton, one-third Rheea. The Rheea was much heavier than cotton, we make the counts Nos. 15 and $12\frac{1}{2}$.

“We remain, yours truly,

“BIRLEY BROTHERS.

“Mr. J. H. Dickson,

“Commercial Hotel, Liverpool.”

The above-mentioned yarns I had woven in Yorkshire, and cloth samples sent on to Sir C. Wood—(see letter from the India Office, page 22)—I also sent *cloth samples* to Mr. Gladstone, with a letter to show such cloth would absorb

perspiration, and giving such facts as to *cost of production* as must have convinced *any man* but the *Chancellor of the Exchequer*, especially a manufacturer, that if drill cloth were made from half Rheeà at 8d. per lb., and half *Surat cotton*, at 16d. per lb., and a contract offered in Lancashire for clothing the British army in India, not only would there be a *great saving* in the *first instance*, but there could not be a second opinion as to the extra strength of the material, and in addition to *that saving*, a contract being offered and accepted, the new material would have been *forced into* the market in *opposition to cotton*, just as jute got forced into the trade in Dundee in opposition to Flax, and (just as the late Sir W. Brown told me) the foundation of what would start a revolution in the trade of Lancashire would have been accomplished. However, it appears to me, by the cool reply from Mr. Charles L. Ryan, 11, Downing Street, who writes, "I am desired by the Chancellor of the Exchequer to say, that the subject to which it refers is a matter not within his province," that Mr. Gladstone is not unlike his great trumpeter, the editor of the *Times*, in whose pages we frequently find advertisements for servants, but that "No Irish need apply." I can only account for my samples being *returned unopened* by Mr. Gladstone knowing right well that I am THOROUGHLY IRISH, and so thoroughly practical on the subject of SPINNING and MANUFACTURING, that if he entered into the subject, I must have come in for a share of the credit, as being the first to discover a cheaper article than cotton for clothing the Indian army, and that he would be obliged to admit that he had assistance from an Irishman, which he could not obtain from any of the talented brothers' in office, not forgetting the President of the Board of Trade; however, as my letter to Mr. Gladstone (if it is not in the waste paper basket) informs him that the great Irish general, the hero of one hundred

fighths, the late Duke of Wellington, discarded linen drill, then called Russian duck, because it held the perspiration when absorbed by that material, I took care to explain to Mr. Gladstone the cause of that objection, and that the dry resin-bound fibres of India were of a different nature to Flax, and that it would not retain perspiration, but allowed it to evaporate as cloth did; and to this I added that the thousands in Lancashire that are still suffering from want of employment, would be relieved if Rheece fibre were introduced. But the ideas of practical men are never used by our rulers until the last moment,—they are like the auctioneer's hammer, only used when the last bid, or offer, keeps the holder in possession of the great mart,—where the eloquence of one is only heard, and forgetting that by late teaching, buy in the cheapest and sell in the dearest market, my suggestion arose, my offer of cheap clothing for the army serving in India, remains to be brought forward next session.

I have made several trials of Newzealand Flax (*Phormium Tenax*), but until lately I could not get rid of the *hard, gritty substance* that covers the fibre, but having got a large bale from Messrs. Gibbs, Bright & Co., Liverpool, that had been taken green from the soil, and by a new liquid that I am now using, I get rid of the gritty or resin matter, the article which can be had in Newzealand at £10 per ton, and brought to London or Liverpool for £5 per ton, must become of vast importance to the manufacturers of this country. I have it *cottonized*, and offers for it at 6d. per lb. from first class cotton spinning firms in the North.

LETTER X.

THE MARK LANE EXPRESS v. DICKSON'S PATENT
MACHINES AND LIQUID.

FOR CONVERTING GREEN FLAX FIBRE FROM UNRETTED FLAX-STRAW
INTO A PURELY WHITE MARKETABLE ARTICLE, IN FIVE HOURS.

To the Editor of the "Banner of Ulster."

"DEAR SIR,—Having had the pleasure, in the early part of last month, of submitting for your inspection some specimens of Flax, hemp, China grass, and various descriptions of Indian fibre, which were prepared by my patent machines and patent liquid, I shall feel obliged (as the editor of the above-named journal has thrown doubts on my assertions as to the advantages likely to be gained by my system) if you will insert the following in your journal in answer to him, and in order that he may know that I am not afraid of submitting my views for discussion, if necessary, through the public press of Ulster, the head-quarters of the Flax and linen trade of Ireland.

"In an influential journal, the *Armagh Guardian*, a paper published in a city that has ever been famed for its linen, and also for its standing at the head of the Flax trade in Ireland, as the quantity sold in Armagh every week far exceeds that of any other market in the kingdom, I observe an article copied from the *Mark Lane Express*, and on perusal I find that the editor has commented, at considerable length, on the subject of Flax-culture in England, the national advantages likely to accrue therefrom, and the importation of Indian fibre in lieu of Russian Flax and hemp; and as he has, no doubt, taken extracts from an advertisement of mine that appeared in your paper, the *Manchester Guardian*, and the *Leeds Intelligencer*, by admitting the possibility of machines being so made as to prepare the fibre without

being retted, but in his wisdom he doubts the practicability of making any further advance, and concludes by remarking that, 'for fine linen or cambric purposes, we must still adhere to the old method of decomposition by steeping, or as it is termed, retting,' and adds that, 'I may be like other inventors, too sanguine in my ability to perform what I propose.*' I now confidently hope that such views, so freely expressed, but in entire ignorance of my system, will not prevent the leading journals of Great Britain and Ireland from ascertaining and reporting on the absolute facts; for, as it is now well known that we are at a loss for paper material, and a reference to the *Leeds Mercury* and the *Times* of the 21st instant will convince even the most sceptical of our want of fibres for spinning purposes, I confidently anticipate that the powerful assistance of the press will not be solicited in vain, when it is known we can produce in Great Britain and Ireland, and import from our Indian possessions an abundance of fibre, superior in strength and fineness to Russian Flax or hemp, and consequently adapted for all kinds of spinning purposes, thus leaving Russia to find another market for her hemp and Flax than England.

"In the first place, I must respectfully inform the editor of the *Mark Lane Express* that the Flax subject, whether it be on its cultivation, selection, spinning or weaving, I am, after twenty-five years' practical knowledge, tolerably well acquainted with, and having reduced my theory to practice, I am able to supersede the difficulty, the besetting sin of all inventors, which he thinks applicable to my patent as well as to others, and in order that he, conjointly with others of your readers, may know the cause of my success, I

* The editors of the *Morning Herald* and *Bell's Messenger* can inform the *Mark Lane Express* editor as to my ability to perform what I propose, as both gentlemen saw my several machines at work.

must beg their careful attention to the following incontrovertible facts.

“After a close connection of five years with two extensive establishments—a distillery and brewery—in the north of Ireland, from 1824 to 1829, I presume it will be granted that, during that period, I had formed a pretty correct idea of fermentation, its causes and effects; and having of late heard so much about the necessity of fermenting Flax-straw by retting, steeping in cold or hot water, or in other words, *rotting* it, in order so to decompose the wood on which the fibre is produced that it will break easily, and with equal facility be beaten or scutched out of the fibre surrounding it, it struck me very forcibly that by such process, a very large portion of the finer filaments of the fibre must be lost by decomposition, and that it was possible to invent and bring into use a machine that would separate the green unretted fibre from the wood, without cutting or otherwise injuring it, and that the result would be a great saving of fibre. Now, in this I have been successful beyond all question, inasmuch as I can produce 5lbs. of fibre out of 14lbs. of green Flax-straw, whilst the result of the very best experiments reported by the Belfast Flax Society in their annual transactions, cannot show more than 2lbs. of fibre out of 14lbs. of retted straw, and as the Messrs. Marshall, of Leeds and Tatrington, say that it takes 12cwt. of green straw to make 9cwt. when retted, it is evident that I have one-fourth less straw for the 5lbs. of green fibre, than those experiments which only show 2lbs. out of 14lbs. of retted straw. There is only one instance on record of $2\frac{1}{2}$ lbs. being taken from 14lbs. of retted straw in Ireland.

“Having explained the manner in which I am enabled to produce double the weight of green fibre, compared with that produced by any other method yet known, I shall now

give my reasons for asserting that the editor of the *Mark Lane Express* is in error when he states that, 'for fine linen or cambric, we must fall back on the system of retting;' and as, by my next process, I am prepared to prove that by the specimens acted upon, hand-scutched Flax, had from the Messrs. Richardson, Brothers and Co., of Belfast, and mill-scutched Flax, grown and scutched upon my old property in Ballymoran, near Armagh, now in the possession of George Henry, Esq., are worth more than double their cost or value when I got them the other week, I shall have much pleasure in submitting them to judges for their united inspection whenever called on.

"My first object is to discharge from the fibre the natural green substances which the plant draws from the soil by water, &c., aided by machinery; and as I use neither soda, barilla, sulphuric acid, chloride of lime, nor any other bleaching stuffs or liquid now in general use, but depend entirely on the products of our own soil, as vegetable matters are my chief ingredients, I produce an uninjured and purely white fibre; and consequently, I assert that, with such pure clean fibre, stronger and better yarns can be spun than it is possible can be spun from retted fibre, which is full of resin, colouring, and other deleterious matter, which must be bleached and discharged by strong chemicals or alkalies, after being twisted or spun into yarns, and the heart or inner part of such twisted yarn must be entirely purged from every particle of resin before it can be woven so as to make prime quality of linen, or if partially purged, for common linen, it must be several months in the bleach yard before a prime whiteness can possibly be obtained.

"In my opinion, the only way to clearly demonstrate the facts to the manufacturing trade, and for the information of the editor of the *Mark Lane Express*, and to convince him

of the foundation and evidence I have for saying that he is in error, will be to give the following calculations:—For example, No. 150 lea yarns are called $1\frac{1}{4}$ lbs., and should be that weight when spun and made up into a bundle of $16\frac{3}{4}$ hanks; it will take $1\frac{1}{2}$ lb. of retted Flax to make the bundle; it loses the $\frac{1}{4}$ lb. by being spun out of hot water, after which it must be boiled in barilla, or soda ash, and most likely be dipped in a solution of sulphuric acid before it be sufficiently purged to be woven into linen or cambric; after it has been so boiled, etc., it is not only another $\frac{1}{4}$ lb lighter in weight, but as a consequence, it is less strong and it is also soft and cotton-like, as the boiling takes from it much of the twist, and the yarn is altogether of a cotton or down-like appearance, all the short fibres being started on the thread.

“Now sir, permit me to contrast and point out the difference between yarns spun from retted Flax and yarns spun from my Flax, made free, as it is before being spun, from all resinous or colouring matter, $1\frac{1}{4}$ lb. of Flax will spin $1\frac{1}{4}$ lb. of yarn—it cannot be reduced in spinning—the short fine fibre or down-like stuff, if any be there, will be twisted in and will level the yarn or thread in spinning, and it will appear shining, with a glossy skin like a silk thread, and being ready for the loom, it will not require further boiling, and consequently no reduction in weight, it must therefore be stronger and better yarn for any purpose. Again, the linen or cambric made from such yarns will not require to be bleached, for it is quite clear that all that will be necessary is to mill-wash and beetle the goods, if they be linen, to finish them for market; and I fearlessly assert that such goods will be as fine and considerably stronger than goods of the same set made from the same number of yarns spun from retted Flax. Expecting that this will meet the eyes of the linen manufacturers, bleachers, and

spinners of Great Britain and Ireland, in your widely circulated paper,

“I am, dear Sir, your obedient servant,

“J. HILL DICKSON.

“British and Foreign Flax Works,

“Grove Street, Deptford, London,

“August 29, 1854.”

EAST INDIA HEMP AND OTHER FIBRES.

Various specimens sent by Dr. Royle, of the East India House, and merchants in Mark Lane, the Messrs. Henry, large importers of hemp and Flax, the following has been the result of preparing :—

Madras hemp, valued when imported at £24 per ton : 2cwt. 3qrs. 3lbs. produced by the machines—

1cwt. 1qr. 7½lbs. clean long fibre, valued at £45 per ton.

1cwt. 1qr. 9lbs. clean tow fibre, valued at £30 per ton.

Waste 14½lbs.

Total, 2cwt. 3qrs. 3lbs.—Cost of preparation 6s. 1½d. per cwt.

This hemp, when prepared with the patent liquid, became soft, white, and so fine when hackled, as to bear the closest comparison with Flax at £80 per ton ; it is better than any Russian Flax for fine spinning.

Bombay hemp, rough and dark, cost £15 per ton ; expense redressing, £4 10s. per ton, sold at £35 10s. This article being similarly prepared, was considered equal in value with the Madras hemp.

Hymalayan hemp, superior in strength to Russian hemp or Flax. This article in the rough state is worth £60 per ton, but when put through Dickson's machines and liquid, it

becomes so soft and fine, and retains its strength, that it is worth £100 per ton.

NALGERY NETTLE.—This is an extraordinary plant, it is almost all fibre as there is little or no waste in preparing it, the shorts or tow resemble sheep's wool and will do well to mix with that article; the long fibre being fine, it is worth from £70 to £80 per ton.

WILD RHEEA FROM ASSAM.—This is not so strong, but equally fine fibre. The Pine Apple, Yercum, Wucknoo-nor, Plaintain, and Aloe fibres are all made softer and more valuable by the machines, but they are only fit for rope and twine makers. See Dr. Royle's testimonial:—

“ East India House,
“ Feb. 28th, 1854.

“ SIR,—I have received the specimens of East India fibres, which you have been good enough to put through your machines and liquid. The effect is marvellous on many of them, and I feel from what I have seen, that your management must be admirable, to convert such ugly rough looking fibres into silky, hair-like material. The other Flax fibres I have also looked at and much admire. There is a great abundance of fibres in India well worthy the attention of merchants.

“ Your obedient servant,
“ J. F. ROYLE.

“ Mr. J. H. Dickson,
“ Machine shop and Flax Works,
“ Grove Street, Deptford.”

The specimens alluded to by Dr. Royle, were the first Rheea and other fibres that I had from him to prepare on my machines.

I had from twenty-five to thirty engineers and pattern makers *at work* from Nov. 1854 to Nov. 1855, making my

improved machinery under my own direction. and that from drawings by my *own hands alone*, determined that no man should be able to say he gave me an idea on *any part* of my inventions, and my success arose from a determination to conquer difficulties, by keeping in mind the motto of the late great Duke of Wellington, “Nothing impossible, try again.”

In addition to the above experiments, I have been induced to add another and a more successful trial on English green Flax-straw, had from the factory of Mr. Smith, Greenwich; of this straw 14lbs. was weighed on its arrival on Tuesday, in presence of Mr. Simpson, Director of the Eastern Counties Railway, and several other gentlemen; it was converted in twenty minutes into marketable fibre, and produced 4lbs. of perfectly clean, long green Flax, and 1lb. of tow.

The newest and most approved of machines and mills in Ireland cannot produce more than from 1lb. 12ozs. to 2lbs. or $2\frac{1}{2}$ lbs. of clean Flax from 10lbs. of retted Flax-straw, and it requires 14lbs. or 15lbs. of green straw, such as I worked, to make 10lbs. of retted straw—see Tuesday’s *Banner of Ulster*, containing a report of experiments made in presence of a committee from the Royal Flax Society of Belfast; from this it is evident that I have produced double the quantity of fibre, from the same weight of green Flax-straw, and what is of more importance, from 20 to 25 per cent. will cover the loss or waste in making the green fibre perfectly white, and thus the delay and expense of bleaching goods made from Flax entirely got rid of.

The reader may ask why I repeat so often the weight of clean fibre from a given weight of *unprepared* material, therefore I wish him to understand, that in no instance have I lifted my pen to assert what my machines could produce, unless I had it in my power to refer to parties of *undoubted position and character*, who had seen the test of working from such weight of raw material.

LETTER XI.

ON THE SUBJECT OF PROFIT MADE BY FLAX-GROWING OVER
EVERY OTHER CROP GROWN IN IRELAND.

“I might add to these statements some scores of instances, where much greater profits have been gained by selling the Flax-straw, and can generally refer with pleasure and pride to Ulster farmers having cleared from £15 to £20 per acre, where they have, in addition to their proper system of cultivation, the opportunity of getting their Flax scutched on their own account; and with such an array of facts before us, are we not warranted in saying, that such *absentee land-owners* as the Marquis of Landsdowne, ought to feel how imperatively necessary it is to introduce amongst the tenantry, and, by every means in their power, to encourage, promote, and extend Flax-culture, under which Tralee, for instance, on *the property of the marquis*, would be so essentially benefitted. It is not many years since that humanity shuddered at the fact that 7,300 *human beings* were immured in the union workhouse of Tralee! What a *mass of misery*, and what an enormous pressure on the tax-payers was here, all of which might be effectually relieved by a wise and liberal expenditure in encouraging the growth of Flax, by erecting mills and introducing improved machinery for the preparation and manufacture of textile fabrics, which would empty the workhouse (falsely named), and liberate the muscular power doomed to dreary inactivity within its walls. ‘Set the prisoners free,’ occupy them in healthy and remunerative employment, and thus contribute not merely to the happiness of the individual but to the permanent prosperity of the commonwealth. Let us contrast any town or district in the Ulster estates with Tralee, and we cannot fail to be struck with the blessings which flow from landowners looking after

their estates, living amongst their tenantry, and cherishing towards them a *paternal regard*, in place of leaving them to the caprice of paid agents and their co-partners (Ireland's curse), the attorneys. Amongst the tenantry of such men as the Lords *Downshire, Roden, Mandeville, Lanesborough*, etc., we never read in *Assize or Petty Sessions* reports, of either *cruelty or neglect*, or of orders issued calculated to *shorten the days of fatherless and helpless infancy*. No, they prefer having a portrait and description of their real worth as landlords (drawn from their acts to a happy tenantry), not emblazoned in and enlarged on by any illustrated publication, but written on the hearts of a people whose high-minded feelings on subjects of justice and truth are equal to the owners of the soil of Ulster. They are perfectly aware of the true meaning of the phrase that 'property has its duties as well as its rights,' and as they are a Flax-growing and manufacturing people, and generally speaking, first-rate farmers, and encouraged in all their pursuits by the owners of the soil, the facts cannot be made too public, because in my humble opinion, they must lead to a national benefit.

“ Her Majesty's ministers have now a splendid opportunity of doing Ireland a great and important service ; the late government failed to do anything to relieve the distress, but with a niggardly hand advanced £1,000 annually, whereas £10,000 for the same purpose would have been too little to permanently establish the culture of Flax in the southern and western districts. Let these facts be impressed upon those now in power. They profess with honest sincerity, I am well convinced, to be the friends of the farmer. Let them make advances to landlords to erect breaking and scutching mills of the most improved description, so that there may be one every five miles apart in every county in Ireland, and not only will the great prisons, such as the Tralee workhouse, be soon emptied of their starved inmates, but the profits that can

be made from such establishments will enable the borrowers to pay off the loan in five years, if proper machinery be first organized for preparing the material.

“I am, Sir, your obedient humble servant,

“J. H. DICKSON.

“London, April 20, 1852.”

Previous to my publishing the above letter, on public grounds, and in most respectful terms, I addressed a letter to the late Marquis of Lansdowne, pointing out the advantages that would unquestionably follow, if he gave his patronage and support to my views of introducing into the workhouse of Tralee my system of employing the inmates, which contained 7,000 of his tenantry; but in place of the noble marquis feeling obliged to me for the facts which I brought before him—facts that every man in the north of Ireland would bear witness of—as to the result from which alone their poor-houses never contained one-eighth of the inmates in Tralee workhouse, he wrote in answer as follows :—

“London, June 27, 1851.

“SIR,—I am directed by the Marquis of Lansdowne to acknowledge your letter of the 25th instant, and in reply to inform you, that he has adopted for the improvement of his property in Ireland such measures as he thinks desirable, under the local superintendence of persons in whom he places confidence, and therefore is under no necessity of troubling you upon the subject; if, however, he should be desirous of communicating with you, he will not fail to let you know.

“I remain, Sir, your obedient servant,

“W. ARNOLD.

“J. Hill Dickson, Esq.”

As I only took the liberty to point out by my letter how the condition of the tenants of the noble marquis

could be 'permanently improved,' and not 'his property in Ireland,' and that in my plain but respectful method of addressing noblemen and gentlemen in a higher sphere of life, and I did not even hint at a desire to gain his 'confidence,' more than to find my letter might lead to a civil answer, and desire for more information on the subject, but the exposure of the awful consequences of such an *amount of misery on one property* was a *sore place* to touch, and there is in the reply such a thorough want of Christian feeling for the *unfortunate tenants* of the marquis, and the 7,300 inmates in the Tralee workhouse, that I cannot but contrast the 'Lansdowne politeness' with the letters I received from the late lamented Lord Cloncurry, which will be found at the end of this book; also letters from Lord Bernard, the Earl of Gainsborough, and Earl Clancarty, to whom I had written in the same strain and for a similar purpose. The most charitable view that I can take of the letter is to suppose that he (if he knew the contents) was suffering from an attack of the gout, the pains of which made him irritable, for I feel certain that, if he in more composed moments thought of the Downshire estate, and the Downshire workhouse, and the cause of its few inmates, his letter would not have been so worded; however, as by such 'local superintendence' there was the thousands I stated to be in *starvation*, it is now to be hoped that the present marquis will lend a hand to the Flax movement in Tralee, as I observe a Flax company has been started there, with a view to do that which I was the advocate of *thirteen years ago*, for the mutual benefit of the Marquis of Lansdowne and his tenants. Property has its duties as well as its rights, and if absentee owners of Irish estates will not try to keep up in the march of improvement with those noble owners who live amongst their people, they must be prepared to hear of it, through the public press, if a civil and respectful letter, such as I wrote the marquis, be treated in a *rude* and *offensive* manner.

The following article appeared in the *Armagh Guardian* after an examination, on the part of the proprietor and editor of that journal, of Dickson's specimens of fibres, and as Armagh is the principal Flax market in Ireland, it follows that the editor of the city journal must know the importance of the subject:—

“IMPORTANT INVENTION. — On Thursday (July 1855) we had the pleasure of inspecting, at the Beresford Arms Hotel, several samples of Flax prepared by Mr. Dickson's patent machines and patent liquid. Among those shown to us were samples of English, Egyptian, Friesland, Archangel, New Zealand, &c., and in every case the result of the operation was most gratifying. The quantity obtained from the raw material is not only greater than has ever been produced by any other process, but the *quality* is decidedly superior, and in marketable value is greatly enhanced. The specimens of the East Indian fibres exhibited in their raw and manufactured state are most extraordinary, and fully prove the superiority of Dickson's process. From the Nalgery Nettle, an ugly looking object in its natural state, we saw material obtained equal to the finest wool. In fact, the majority of the articles, no matter what their original character, had the same silky feel, and appeared equally as well adapted for manufacturing into the finest cloth. Mr. Dickson's process is simple, and promises to effect a mighty change for the better among both the agricultural and manufacturing classes. He intends returning to Armagh at the cattle show, and will give a public lecture on the subject. It is gratifying to us to record his success after so many years of labour and study.”

Lord Lovaine, M.P., Colonel Alcock, Mr. J. P. Oaks, M.P., and several Flax merchants from London, having seen my first machine at work, his lordship requested me to prepare a small bale of green Flax-straw, grown in Northum-

berland by Mr. Dand, one of his lordship's tenants. I prepared it, and the following *is the result* :—

MR. DICKSON'S METHOD OF PREPARING FLAX.

“ We (*Bell's Messenger*, London) have received the following statement from Mr. Dickson :—

“ ‘ Grove Street, Deptford, May 30th.

“ ‘ SIR,—I have this day prepared Lord Lovaine's sample of Flax, 41lbs. 14ozs., which produced 19½lbs. of clean green fibre. This is more than I have before obtained. Lord Lovaine sent the sample to ascertain how much fibre I could produce out of a given quantity. At his lordship's request, on its arrival, I had it weighed in its green and damp state, as when taken from the field; its weight was 53lbs. 4ozs. I placed it in the drying room over the steam pipes, and on Saturday morning again had it weighed, and found that the weight was reduced to 41lbs. 14ozs. I prepared it in the presence of Messrs. Elster and Co., Flax merchants, New Broad Street, London, and several other gentlemen, all of whom I requested to see the result, and weighed in their presence 19½lbs. of excellent fibre, sufficiently broken and free from wood for my purpose of preparing it for the market.

“ ‘ I remain, Sir, your obedient servant,

“ ‘ J. H. DICKSON.’ ”

The above letter appeared in the *Banner of Ulster*, *Belfast* and the *Armagh Guardian*, and *Bell's Messenger* (London), copies of which I sent to Lord Lovaine that he might see the result of the experiment on his tenant's Flax.

The following letter from the late F. Loyd, Esq., governor of Cork Gaol, deserves the consideration of the public, and is well worthy of being in my third edition on Flax-culture. He (Mr. Loyd) was the first person that I heard of, that had

prepared green Flax-straw, after I had discovered how it could be prepared by machinery without retting.

MANUFACTURE OF GREEN FLAX-STRAW.

To the Editor of the "Cork Constitution."

"County Cork Gaol, 23rd January, 1852.

"DEAR SIR,—Notwithstanding all that has hitherto been said on the subject of Flax, I venture to trespass on your valuable space with a statement which may be worthy of some consideration.

"Having for some time carefully attended to the preparation of green Flax fibre, I have arrived at the following practical results:—

"1cwt. of Flax-straw, value 3s., will yield 12lbs. of Flax, and 14½lbs. of tow, cleaned fit for spinning. The Flax gives 14 yards of linen 28 inches wide, worth 6d. per yard, 7s.; and the tow 9½ yards of sacking, 20 inches wide, worth 4d. per yard, 3s. 2d.; so that 3s. worth of straw realizes 10s. 2d. worth of manufactured material. No labour is, however, reckoned in this calculation, my circumstances not enabling me to estimate its cost.

"The process is entirely hand labour, after the use of a common break. The article produced is superior to any material that can be purchased for the purpose of public establishments, and can be seen by any person wishing to test the matter at the county gaol.

"I do not propose this manufacture as capable of competing with machine-made linen from retted Flax as an article of trade, but I suggest it as a most important means of rendering unpaid labour productive. People seeking workhouse relief and confined in gaols should be made, as far as possible, to provide for their own consumption; and this not only as a means of economising the public funds, but for the purpose of teaching them habits of industry. Instead of buying *imported*

articles, it would be very well to try what can be made of our own materials, and encourage cultivators of Flax by opening them a market for their green straw, vast quantities of which could be used in the workhouses of the county.

“I am dear Sir, truly yours,

“F. LOYD, GOVERNOR.”

EDITORIAL REMARKS OF THE *LONDONDERRY*
STANDARD.

“IMPORTANT TO MANUFACTURERS.—MR. DICKSON’S PATENT
INVENTIONS, IN JULY 1855.

“We have much pleasure in directing attention to Mr. Dickson’s advertisement in our columns to-day. We extract the following paragraph from the *Banner of Ulster*, and as we had ourselves, when lately at Belfast, an opportunity of inspecting the sample referred to, we can also bear witness to the surprising result of Mr. Dickson’s inventions:—‘At the request of Mr. Dickson, we visited him at the Commercial Hotel, in order to see his various samples, and to hear his explanation of the working of his patents. We do not pretend to be capable of giving an opinion as to the value of the Flax, Hemp, China and India Grasses, Nalgery Nettle, or the other Indian fibres we saw, but we confess that we were struck with astonishment to see a long handful of fibre that had been taken from the green straw and prepared by the machines, and the one end made white, and more like silk than Flax, by a five hours’ process, and Russian and Italian hemp prepared in the same way, appears to be equally fine with the Flax. We questioned the inventor and patentee as to the strength of the fibre, and we give his own words, allowing those interested to test the quality, and ascertain how far they are proved by facts. Mr. Dickson says he takes the Flax green from the field,

but it must be dry. He had it passed through his machines, and cleaned of the wood or shives on which it has been produced; he immerses it for an hour in cold water, and discharges by this process (by a wringing machine and plenty of clean water) all the green colouring matter; he then boils it two hours by steam in a given portion of cow's urine and water, wrings it out, and then washes in hot water. He then prepares a certain weight of the *best soap* to a certain weight of the fibre, and by another two hours' boiling—up to 210 degrees—the fibre is perfectly white, and freed from all the resinous substances that are found to be only partially got rid of by the old system of steeping. He argues that the simple articles he uses cannot injure the fibre, and that as no decomposition or rottenness has been allowed to set in or act on the fibre, it must be found a better article than retted Flax, when spun into yarn. Another part of his argument is, that as the fibre is perfectly free of the resin, without the oily nature of the plant being injured, it splits from the hackle, and will make a closer and better thread than retted Flax, inasmuch as it will be a pure, solid fibre, and it will take more of it to spin a thread of the same thickness or number than it will do if the same be made from retted Flax. Again, the Flax or yarn being perfectly white, it will not boil down as soon as yarn from retted Flax does, and consequently a stronger and better web must be produced, and the bleaching altogether dispensed with. Should Mr. Dickson's process be found to answer expectations, it may go far to make the community of Britain independent of Russia, in the article of hemp especially, and may be the means of retaining within our own territorial possessions seven millions of hard cash, which have been hitherto yearly transmitted to Russia."

To the above it should be added that I used another article, *secretly*, which counteracted the effect of the alkali in the

soap, and prevented injury to the fibre—which article I did not patent.

The following remarks by the editor of the *Morning Herald* (London), who visited my factory to witness the working of my first patent machine for preparing Flax and hemp, on Tuesday, the 2nd of July, 1852, may deserve notice:—

“NEW FLAX MILL.—The great obstacle to the cultivation of Flax, and the many difficulties that have attended its preparation, have greatly retarded its growth in Great Britain, and any machine calculated to remove such objections, and to economize in the tedious and difficult processes of breaking, scutching, and hackling, must be hailed as a great boon by all who are interested in its cultivation. Mr. J. Hill Dickson, of Grove Street, Deptford, has recently patented a portable mill, on which all the above processes can be carried on. It is very compact, standing on a frame $6\frac{1}{2}$ feet long by $4\frac{1}{2}$ broad. It will supersede the use of the skilled hands termed scutchers, and reduce the cost of this process to about sixpence per stone. It is said to be the first machine ever invented that will break, scutch, and hackle the Flax as it is taken from the field without undergoing the tedious process of retting or steeping. We had an opportunity of seeing the mill in operation yesterday. It was worked by *hand* instead of by steam power, and making allowance for this drawback, appears well calculated to realize the anticipations of the patentee. The construction is ingenious, and it does not appear likely to get out of order.”

This was the first of my improved breaking machines, combining *scutching* and *hackling*, but having made further improvements I requested Lord Lovaine and a number of gentlemen, including the editor of *Bell's Weekly Messenger*, to see my machines worked, and I had two lots of Flax-straw weighed in the green state, 14lbs. of each, and the result was

11½lbs. of fibre out of 28lbs. of Flax-straw.—See the editor's report.

The experiment made by working my former patent machines for breaking and scutching Flax and hemp, from retted-straw, sent over by Messrs. Prichard and Mourneron, merchants, Paris (with whom I left a quantity of samples of all kinds of fibres prepared by my patents, during the "Exhibition of Industry," in Paris, in 1855, where I exhibited similar specimens), is another proof of the value and importance of my machines; and I can refer to Mons. J. B. Pastoureau Labesse, as he took a note in his pocket-book of the work done, and said I might refer to him *at any time*.

HEMP AND FLAX PREPARED BY DICKSON'S PATENTS.

April 11th, 1856.

The following was the result from preparing by the machinery alone:—A portion of four bales of hemp and Flax-straw, obtained from the committee of the Flax Society of Brittany, by merchants in Paris, was sent to Mr. Dickson to ascertain what he could produce from them by his machinery. The Hemp and Flax-straw had been *retted* (steeped in water), the usual way of preparing in France.

The French Government Engineer, Mons. J. B. Pastoureau Labesse,* was sent from Paris by the government to examine the machinery, and witness the working and results. R. M. Jones, Esq., Tooley Street, Southwark, and several other gentlemen were also present.

* This gentleman weighed the Flax and Hemp-straw before and after it was broken and scutched, and took a note of it in his pocket-book, and gave me leave to refer to him as to the quantity produced clean by the machines.—
J.H.D.

First. 7lbs. of hemp-straw was weighed and worked by the patent machines. The produce was—

Long fibre 0lb. 12oz.

Tow, or short fibre 0lb. 14oz.

1lb. 10oz.

From this it appears that 12cwt of retted hemp-straw, would produce 2cwt. 3qrs. 4lbs. of clean fibre of marketable value.

Second. 7lbs. of Flax-straw was weighed and worked by the same patent machines. The produce was—

Long fibre 2lbs. 2oz.

Tow, or short fibre 0lbs. 6oz.

2lbs. 8oz.

From this it appears that 12cwt. of retted French Flax-straw, would produce of—

Long scutched Flax 3cwt. 2qrs. 16lbs.

Tow, or short fibre 0cwt. 2qrs. 16lbs.

4cwt. 1qr. 4lbs.

Please compare this with the experiment of Mr. Arthur Marshall, of Leeds, on 12cwt. of Flax-straw, as reported in the *Banner of Ulster*, of April 5th, 1856. From 12cwt. of green Flax-straw, Mr Marshall had only 9cwt. 8lbs. of retted Flax-straw, and this when scutched, only produced 1cwt. 4lbs. of scutched Flax, which is only at the rate of $1\frac{1}{2}$ lb. to 14lbs. of retted Flax-straw. See Mr. Marshall's letter on his produce.

The new patent machines and patent preserving liquid alluded to by the editors of the *Armagh Guardian* and the *Londonderry Standard*, by which I produce FLAX, HEMP, and the various FIBRES OF INDIA in a fit state for being spun into yarns, without being retted or decomposed, and the

cost of production and profits realized will be found fully explained by the explanations which follow.

After getting paid £750 for my right of patents for Italy, and an order for £2,000 worth of machinery, I visited my native city, Armagh, Ireland, on the 10th July, 1854, and brought with me a large assortment of specimens of Flax, hemp, and Indian fibres, and after they had been examined by the trade and editor of the *Armagh Guardian*, I agreed to return the next month, and to give a lecture on the subject, before the members of the Royal Agricultural Society of Ireland, at its annual meeting in Armagh; but as business prevented my attendance, I sent forward three cases of specimens which, including cases, cost me above £12, directed to the secretary of the Agricultural Society, for exhibition, but through the stupid neglect of the railway officials, my case was overlooked until the show was over. In consequence I wrote the following letter for publication.

IRISH RAILWAY OFFICIALS AND THE MODE OF PERFORMING DUTY.

To the Editor of the "Armagh Guardian."

"DEAR SIR,—It is much to be regretted, that whatever opportunity presents itself for opening up a way to improvements of any kind, but more particularly in matters connected with the agricultural and manufacturing interest of Ireland—for instance, the Agricultural Show of the 9th, 10th, and 11th instant, which called forth all sorts of Irish production—that men are selected for office whose incapacity or inattention to their duty retards the working out such resources. Unfortunately for Ireland, employment or situations for the middle classes *are scarce*, and it too frequently happens, as we

have lately read in the *Times* (O'Flagherty, Lawley, &c., to wit), that either by *political influence* with government, *favouritism*, or *jobbing*, men are pitchforked into the position of public servants, who, however gracefully they may figure in a drawing-room, or mounted on a hired horse in Phoenix Park, are as frequently found incapable of giving public satisfaction by doing *their duty*. Having myself good cause to complain, I would respectfully suggest (as a remedy for such a national evil) for the consideration of landowners, merchants, and the manufacturing classes in Ireland, the necessity of advising *aspirants* to office, whether government, railway, mine, or other joint-stock companies, to graduate first in London, where the motto is 'business first, and pleasure after,' and when proper selections are made from *city-trained* men, there will be little to fear from complaints, such as I have now to bring forward, of *neglect of duty*.

"My complaint against the railway officials in Armagh is quite in keeping, and fully corroborates a common saying in London—'that if letters require an immediate answer, or business to be immediately attended to in Ireland (such as would occupy Londoners a few hours), that persons expecting such diligence in Ireland must bear with disappointment, as Irishmen feel they have done their duty if *two days* are allowed previously to elapse.' I am grieved to acknowledge that I must bring forward, as proof, an instance of the correctness of the accusation, although I am aware that Ulster abounds with many thorough men of business; but as no man holding a public situation can excuse himself for neglect of a *day*, much less *two days*, he must not feel surprised at his being called to account for it: for no matter how business may accumulate, extra hands and 'extra attention' are required, and business should not suffer from inattention—if so, the public should know it.

“ Being in Armagh a fortnight previous to the Agricultural Show, with a large assortment of English and Foreign Flax and hemp, China grass, and East Indian fibres of various qualities, the greater part of which is far superior in strength and fineness, for any purpose, to Russian hemp or Flax when worked by my patent machines and patent liquid, I was solicited by several influential gentlemen, old friends of mine, to return to the show on the 9th instant. I promised to do so, and on coming home I prepared three mahogany and glass cases, which cost me £8 10s., and 15s. carriage to the railway, with a fresh and better assortment of specimens, and forwarded them by railway on the 8th, that they might arrive in Armagh on the 9th, directed to Mr. Harkness, Secretary to the Royal Agricultural Society. I regularly advised that gentleman of the transit, and expected to follow that evening, but business of some importance prevented me, and I had to abandon my intention. I consoled myself by presuming that the cases would be safely delivered into the hands of Mr. Harkness, and that the public would have an opportunity of seeing in the show yard the various fibres prepared in a manner superior to anything yet discovered—a fact admitted by English Flax spinners, who have said that ‘*I make Flax into silk, and hemp into Flax,*’ when giving me orders in Preston, on my return. This was also admitted by some of the most extensive bleachers and manufacturers in Ireland. To my surprise and great annoyance the large case, 9ft. by 3ft., with two smaller cases bound upon it, large enough, one would think, to be seen (and for which the railway company claims £3 carriage), although arriving in Armagh on the 9th, were not delivered to Mr. Harkness until the 11th, when the show was over!

“ Now, sir, I fearlessly assert that the inspection of my specimens would have been interesting, and a treat to the

merchants of my old native city, as well as the nobility and gentry attending the show yard. I think it too bad that my exertions to gratify them have been lost by the inattention, neglect, and incompetency of the railway official; or, if competent, by his total neglect of duty. There were three cards on the cases, with instructions to send them on direct, without delay, to Mr. Harkness, Secretary, Show Yard, Armagh, 'no matter at what cost.' Under the circumstances I think that I am justified in calling on the Ulster railway directors to investigate the cause of this palpable neglect, and if the official be found to have been amusing himself in the show yard from the 9th to the 11th, with the idea in his unbusiness-like brain that mine and other people's property 'would keep' until a more convenient time—I say, if such can be made out, the second in command under him should take his place, being first sent to London for a season, there to be drilled before his installation into office. The public may then rely upon their goods, large and small, being sent on to their destination as directed, without remaining two days, to the great loss, disappointment, and injury of the senders, as well as those that expect them, especially in cases of emergency such as the present. By giving this a place in your journal, as a warning to the servants of the public to perform their duty, you will oblige,

“Your obedient servant,

“J. H. DICKSON.

“British and Foreign Flax Works,

“Deptford, London, 26th August, 1854.”

The above letter was written with a view of effecting a cure of the evil, by imparting a lesson on the attention required of public servants, that would not be so soon forgotten as a private reprimand from one or more of the railway directors. It was a *coup de grace* for neglect of duty.

In placing before the reader the profits which the Irish

farmer can derive from cultivating and preparing one acre of Flax in the usual way, let me call his attention to the saving of expense, time, and the avoidance of loss by decomposition, which are effected by my system being carried out.

FLAX (DICKSON'S PATENTS).

DR.	£	s.	d.	Cr.	£	s.	d.
To one acre of				By 2½ tons of Flax-			
land	1	6	9	straw (produce			
„ 2½ bushels Seed	1	2	6	114st. of green			
„ Ploughing and				Flax-straw) at			
sowing	0	12	0	4s. per stone ...	22	16	0
„ Weeding	0	10	0	„ 28 stones of tow			
„ Pulling	0	12	0	at 2s. per stone	2	16	0
„ Taking off seed	0	6	0	„ 16 bsls. seed at			
„ Poor Rates and				10s. per bushel	8	0	0
taxes	0	10	0				
„ Carriage	0	5	0		33	12	0
„ Scutching 114st.				Deduct expenses			
of green Flax-				of production ...	6	3	3
straw	0	19	0				
				Nett profit on 1			
£6	3	3		acre of Flax sold			
				green	£27	8	9

Now, as the above profits proceed from Flax being broken and scutched by machinery, in the green unretted state, just as it comes from the field, let me go a stage further in the process or patent system that I have discovered, in addition to my patent machines for breaking, scutching, and hackling Flax, hemp, and other fibres, that I have made equally valuable with Flax and hemp for many purposes.

I find by experiment and calculation that 14lbs. of green fibre will produce, when prepared by my patent liquid, 9lbs. long *white* Flax, and 2lbs. 1oz. of tow, leaving 2lbs. 15ozs.

waste. In this process, calculated at this rate, $2\frac{1}{2}$ tons of straw (the produce of ONE ACRE of land) will give 114 stones of clean, green Flax, and 16lbs. of tow.

FLAX (DICKSON'S LIQUID PROCESS).

DR.	£	s.	d.	CR.	£	s.	d.
To 114 stones of green Flax, at 4s. per stone ...	22	16	0	By white Flax re-dressed, 73 sts. at 12s. 6d. per stone	43	16	0
„ 28 stones of tow at 2s. per stone	2	16	0	„ 26 sts. of Flax-wool at 7s. per stone	9	2	0
„ For liquid £5 14s., and for wages £4.....	9	14	0	„ 99 sts. of fibre	52	18	0
				„ Deduct cost of Green Flax, bleaching, &c... 35	6	0	
	£35	6	0	Nett profit	£17	12	0

The above profits show by the liquid process (from minute calculation, and many experiments during the last three years), that there is only one third in weight lost in converting the 114 stones of green into 73 stones of white long fibre, and therefore, 26 stones of carded Flax-wool. It must be admitted by the farmers in Ulster that, as they cannot average more than from 45 to 50 stones per acre by the old system of steeping or retting, my system gives more than *double* the profit, not only in money value, but in weight of fibre. I challenge those who may doubt my figures of calculation to an investigation, as I am ready at any moment to work the machinery and process in their presence.

Many persons are not aware of the increasing demand and consumption of Flax, and may doubt the likelihood of

finding a market, if the home-trade in cultivating Flax be encouraged in Great Britain and Ireland. The best answer that can be given to parties who fear that the consumption will decrease, is the following article, taken from the *Belfast Banner of Ulster*, Dec. 29th, 1855, to which I call your attention :—

“Our imports of Cotton and Flax during the last thirty-five years have risen in a most remarkable ratio. Since the advent of that era, steam has pursued its giant course, and swept on its way with almost irresistible impetus. Our vast system of railways, the introduction of Flax-spinning by machinery, ocean steam navigation, and all the lesser projects, of which the Archimedean power is the chief mover, have given manufacturing industry the most wonderful degree of advancement. During the intervening period from 1820 to 1854, the imports of the articles named averaged as follows :—

		Cotton.				Flax.
		lbs.				cwts.
1820	- -	108,000,000	- - -			382,500
1840	- -	470,500,000	- - -			1,002,360
1854	- -	860,000,000	- - -			1,303,250

“The cotton manufacture of Lancashire creates a weekly circulation of wages, which in amount exceeds the total proceeds of the gold mines in both hemispheres. We have frequently referred to the wide-spread demand for labour which has been created in the north of Ireland by the operations of the cotton trade. When the protection duties, which existed between this country and Great Britain, were repealed in 1824, only about 9,000 hands found employment at the cotton looms. At present the number of weavers would amount to 50,000, and in the working of sewed muslins there are probably six times that number regularly employed in the several provinces. This fact is hardly known, or we should

rather say its importance is not fully estimated, even in the districts where the operations of the cotton trade produce the greatest amount of good. Every writer on the subject of industrial employment in Ireland is able to tell of the advantages that arise from the linen manufacture; but it is very rare to find the value of the cotton trade duly set forth by current chroniclers.

“The imports of Flax this year will reach about 56,000 tons, value at least for about two-and-a-half millions. During the present season farmers have received high rates for home-grown Flax—viz., 5s. 9d. to 8s. 6d. per stone for one description of scutched, and 7s. to 15s. for the other. These rates would surely pay the cost of culture, and leave a large margin of profit to the grower. Flax is one of those products which the soil of Ireland can raise to great perfection. Several of the more skilled growers have this year produced a class of fibre valued at £140 per ton, and yet it would seem as if that phase of agricultural enterprise were likely in some degree to fall into the back ground. Our splendid factories are unable to push on with the spinning of linen yarn, in consequence of the dearth and scarcity of Flax; and while such is the fact, thousands of acres, throughout every province in Ireland, lie in a state of semi-cultivation.

“The official accounts of this year cannot, of course, be had for some weeks to come; we may, however, estimate those of Flax imports under last year, and the cotton account rather above that of 1854.”

LETTER XIII.

IMPORTANT TO FARMERS.

A READY MARKET FOR FLAX-STRAW OR STALKS.—THE LONG FIBRE PREPARED FOR FLAX SPINNERS, AND THE SHORTS OR TOW FOR SPINNERS OF SHEEP'S WOOL.

To the Editor of "Bell's Weekly Messenger."

"SIR,—It is now universally admitted, that the only objection to a more extended cultivation of Flax, is the difficulty which farmers experience in getting rid of the straw or stalks, as no regular market for the sale of the article in its unmanipulated state has ever been established in this country. As the seed will average eighteen bushels per acre, and must be equal in value to a crop of oats, it is a matter of importance to farmers to know that a market for the article is no longer to be wished for, and that by good tillage and careful harvesting of their crop, they are certain of a market in London, at prices that will induce them to cultivate Flax extensively, without the troublesome and expensive, and what is of more importance, very uncertain process of steeping or retting.

Being in early life well acquainted with farming operations, Flax-culture in particular, and the profits arising therefrom, I have been watching with deep interest for the last seven years the decline in price of farm produce, because of my conviction that nothing but the introduction and practical working of machinery in farming pursuits could bring profits up to what they were previous to 1845, when the staple industry of this country had protection. The objection to Flax-culture is the great expense of the skilled manual labour which must be incurred in preparing and making Flax marketable, and therefore, I confined my ideas entirely to the construction of

machinery for the purpose, and I am now able to say that I have overcome every difficulty, and have worked my machines successfully in the presence of several landowners, who take a deep interest in the subject, and am ready to purchase any quantity of Flax-straw from farmers, at fair prices according to quality.

In addition to the fact already stated in your paper, of my having produced $5\frac{3}{4}$ lbs. of fibre out of every 14lbs. of Flax-straw, an experiment was made on the 30th ult. in presence of several gentlemen on a small bag of Flax-straw, containing in the green state 53lbs. 14ozs., sent by Lord Lovaine, to ascertain the produce and value. On being dried its weight was reduced 12lbs. 10ozs., being then 41lbs. 4ozs., and being operated on by the machine the wood or shive was got rid of, and $19\frac{1}{2}$ lbs. of green Flax fibre was the result.

Your readers will naturally ask, is there a market for such fibre, and is it as profitable as retting and scutching in the usual way? I answer, there is a market for it, and large quantities can be sold at very remunerating prices. Green unretted Flax is a better article for many purposes than retted Flax. The gum or resin, being retained, it will, *when spun*, make *stronger and better* shoe-thread and fine twine, and also better sailcloth and canvas than any retted Flax. Being able to obtain the fibre without having recourse to decomposition, I can collect all the fibre the land produces; whereas in retting a great deal of the finer filaments disappear. By my machines I bring it into a marketable state without the after process, which is requisite only when a finer and more valuable quality of Flax is wanted for linen and cambric yarn spinners.

Seeing that I have produced $19\frac{1}{2}$ lbs. of fibre out of 53lbs. 14ozs. of straw sent me for experiment, and calculating 20lbs. out of 56lbs. I find in preparing it the produce and profit will be as follows:—

One ton of green Flax-straw, undried, will produce, when dried, 15cwt., and that when prepared by my machines, will produce 800lbs., or 57 stones 2lbs., value £26 per ton, or 3s. 3d.

per stone. £9 5 7

EXPENSES OF MATERIAL AND WAGES.

One ton of straw or stalks cost. . . . £3 0 0

One man at engine 0 3 0

Coals. 0 7 6

Four girls drying straw, 10d. each . . 0 3 4

Three men attending machines, at
2s. 6d. each 0 7 6

Twenty-four girls, at 10d. each . . . 1 0 0

————— £5 1 4

Nett profit on one ton of green straw . . . £4 4 3

As I take the Flax in the green damp state as it comes from the field, and one acre will produce $2\frac{1}{2}$ tons, it is evident that the farmer who gets from £3 to £4 per ton for his straw must have from £8 to £10 fair profit, as the seed is worth more than the rent and labour.

Having calculated selling the Flax in the green state at the low price of £26 per ton, whilst the lowest price of Riga Flax is £32 per ton, I will give an average of the expense and profit of preparing a ton in Norfolk, where it is largely grown. One of the most extensive practical growers of Flax in that county says, he can produce 20 stones or 280lbs., out of one ton of Flax-straw. Let us suppose he gets 8s. 9d. per stone, or £70 per ton, a high price for English Flax, and we find matters stand thus:—

One ton of straw produces 20 stones of fibre at

8s. 9d. per stone £8 15 0

EXPENSE OF MATERIAL AND WAGES.

One ton of straw	£3	0	0
Watering, grassing, lifting and carting	1	0	0
Scutching 20 stones, at 2s. per stone	2	0	0
		6	0 0

Nett profit on one ton of straw £2 15 0

When contrasting the best method of hand labour in preparing Flax by which the highest price can be obtained, with the easiest and cheapest mode of preparing it by machinery only, and selling it in that state, the advantage of the latter is so apparent that I will not allow the mechanical (although it is the principal) part of my system to stop the further development of my process; for, as in many instances, it would be a sacrifice of property to sell the fine Flax in the green state at £26, or even £36 per ton; it would be no less a robbery on farmers to tie them down to £3 per ton, when in reality they may produce fine fibre, good value, for £4 per ton. But as no person can judge of the quality in the straw, nor estimate its real worth until the Flax undergoes such a course of preparation as will discharge the green sap and the resin it has drawn from the soil, there is little chance of the grower meeting with the worth of his produce at all times, until the system of finishing the preparation of the Flax plant becomes generally known—and having, in my opinion, arrived at the most economical mode of preparing it, I confidently submit the following statement:—

305lbs. of long hackled* Flax fibre, fine quality			
and value for 1s. per lb.	£15	5	0
210lbs. of very fine tow, equal to the finest			
wool, and may be mixed with sheep's wool			
previous to being spun, for 10d. per lb.	8	15	0
Total 515lbs.	£23	0	0

* Hackled Flax often sells from 1s. 2d. up to 1s. 8d. per lb.

DAILY EXPENSE OF MATERIAL AND WAGES.

One ton of green Flax stem . . .	£3	0	0
Liquid, &c.	2	0	0
Coals	1	0	0
1 Engine man, 3s. per day. . . .	0	3	0
3 Men attending Flax mills, 3s. each	0	9	0
24 Women „ „ 10d. each	1	0	0
24 Women steeping and drying, 10d. each.	1	0	0
3 Men attending 3 hackling ma- chines, 3s. each	0	9	0
12 Women attending the hackling machines, 10d each	0	10	0
3 Men attending 3 carding en- gines, at 3s. each	0	9	0
12 Women attending the carding engines, 10d. each	0	10	0
2 Men in vat room, 3s. each . .	0	6	0
	—————	£10	16 0

My profit in one day in preparing one ton of
Flax-straw £12 4 0

Total number of hands employed (13 men and 72 women),
equivalent to 85.

“ In addition to the above profit, I can produce from the liquid I use—startling as the assertion may seem—a more valuable article as manure, than guano. For the facts, as to the fertilising nature or properties of the water in which Flax has been steeped, see Sir Robert Kane’s *Industrial Resources of Ireland*, and my experiments on dahlias, &c., as reported in the *Gardener’s Chronicle*, and the *Gardener’s and Farmer’s*

Journal, in 1848: and the opinion of Mr. Mardock, *Botanic Garden*, on the flowers sent for his inspection.

“I am, Sir, &c.,

“J. H. DICKSON.

“British and Foreign Flax Works,

“Grove Street, Deptford, June 4, 1853.”

Mr. Joseph Dodson, Flax broker, Jeffrey Square, London, valued Lord Lovaine's green Flax-fibre at £26 per ton. His lordship had it sent to Messrs. Plummers, Flax spinners, Newcastle-on-Tyne, and they valued it at £25 per ton, and if steeped, valued it at £60 per ton; Messrs. Gifford and Son, Mark Lane, valued it at £30 per ton; and Mr. Scott, Flax broker, Trinity Square, Tower Hill, valued it at from £28 to £30 per ton. It is therefore evident that, if farmers prepared their Flax with my machines, and sold it at from £28 to £30 per ton, it would pay them better than if they got £60 per ton by the old system of retting in water only; or if they sold the straw at £4 per ton, or £10 per acre, it would pay them better than any other crop.

After having had some dozens of gentlemen at my factory to witness the working of the machines, including merchants from London, and from firms interested and engaged in the Flax-trade, amongst whom were Messrs. Elster and Co., Flax agents for the sale of *Russian Flax*; Messrs. Cassivatti, Brothers, agents for *Egyptian Flax*; Messrs. Azzoni and Co., agents for *Italian Hemp and Flax*, I was honoured with notice from the Right Hon. Lord Lovaine, M.P., saying he wished to be present at the working of my machines. In consequence I sent off invitations to several members of parliament and other gentlemen who took an interest in my labours, and amongst those who favoured me with their presence was Mr. Lee, the editor of *Bell's Messenger*, who very attentively watched the operations, and gave a full account of what he witnessed during the several hours the

machines were at work ; and the following is the report that appeared in that journal the week after :—

MR. DICKSON'S METHOD OF PREPARING FLAX.

“ At a time when the skill and ingenuity of the farmer are being taxed to the utmost to enable him to compete with his foreign rival, and to maintain his position in the social scale, every plan which proposes to aid him in the accomplishment of this object ought to command attention. Acting under the influence of this feeling, we accepted an invitation from Mr. Dickson, to pay a visit to his factory in Grove Street, Deptford, and examine his process for the dressing of Flax, which, he contends, is far superior, as well in its simplicity as in its results, to any hitherto adopted in the United Kingdom.

“ Without entering into the details of what we saw—because we do not know whether we should be justified in so doing—let us say at once that, as far as we are able to judge, the plan which Mr. Dickson has matured, as the result of many years' close application and experience, fully justifies him in asserting its superiority over those of Schenk, Warnes, or Watts.

“ In the first place the tedious, expensive, and difficult process of steeping and retting is dispensed with. One consequence of this is a much larger amount of marketable produce. For example, out of one ton of green Flax-stalks Mr. Dickson produces 920lbs. of fibre, that is, $5\frac{3}{4}$ lbs. out of 14lbs. of stalks. When prepared by his liquid, these $5\frac{3}{4}$ lbs. have produced 3lbs. 6ozs of very fine fibre. Now, by the system adopted by the Belfast Society, 14lbs. of retted straw will not produce more than $1\frac{3}{4}$ lbs. of marketable fibre, and Mr. Warnes does not, we believe, produce more by careful hand-dressing. These simple facts prove at once the superiority of Mr. Dickson's system. That gentleman, in a circular of his own before us, says—‘ I can produce from one ton of green Flax-stalks, 515lbs. of remarkably fine marketable fibre, calculated for Flax and wool spinners; for as the tow is

stronger and finer, because of not being retted or reduced by decomposition, I have greater weight of material, although completely free from the gum or resinous substances, and being perfectly white, will take any colour and mix with sheeps wool, and therefore add to the strength of the woollen goods when so mixed in spinning; two lots, each weighing 14lbs. of green Flax-stalks were operated on, in presence of Lord Lovaine, M.P.; Colonel Alcock; Mr. Caldicott, Tratting Lodge, Colchester; Mr. J. P. Oakes, M.P.; M. Caldicott, Jun.; and Mr. Shore, of Deptford; and several other gentlemen interested in the Flax subject. The result in both cases was $5\frac{3}{4}$ lbs. each, or $11\frac{1}{2}$ lbs. of fibre out of the 28lbs. of stalks.'

"As regards this statement, we can bear testimony to having seen the results, and those results put beyond all doubts the merits of Mr. Dickson's plan. With respect to the *tow*, its superiority over that produced, for instance, by Claussen's plan, of which so much has been said and written, is so great as scarcely to admit of comparison on the part of the latter.

"As many of our readers are aware, the Belfast Flax Society have for some years past recommended Schenk's system as the best to be followed. By some improvements lately made in that system, the amount of marketable fibre formerly produced from a given quantity of Flax-stalks has been increased. In a case reported by the society, where 10cwt. 1qr. 21lbs. of stalks were operated on, the result was 234lbs. of Flax and tow, whereas Mr. Dickson's plan, from the same weight of Flax-stalks, will produce 268lbs. of *marketable fibre* perfectly white, if preferred, the colour being under the control of the manufacturer.

"We think we have said enough on the present occasion to justify us in inviting the attention of practical men to the subject. We hope that some means will be adopted to bring the question under the notice of the Royal Agricultural Society of England, the more so, because we have been

informed that some unfair and injurious statements have been made by ill-informed parties respecting the character of a plan which they have never seen in operation, and of which, therefore, they were not competent to judge.”—*Bell's Weekly Messenger*.

CALCULATIONS FROM THE PRACTICAL WORKING OF DICKSON'S PATENT MACHINES AND LIQUID

FOR PREPARING AND PRESERVING FLAX, HEMP, AND
OTHER FIBRES.

In the presence of the agents of the Italian Company, who have since purchased Dickson's patents for Italy, 14lbs. of green unretted Flax-straw produced 4lbs. of long clean fibre, and 1lb. of tow—total, 5lbs. of fibre.

As 14lbs. will produce 4lbs. of Flax and 1lb. of tow, 1cwt. will produce 32lbs. of Flax and 8lbs. of tow, and 20cwt., or one ton, will produce 640lbs. of long Flax and 160lbs. of tow, therefore, to prove the advantages of Dickson's patents, he brings in contrast the *late patents* obtained by others, and reported in the annual transactions of the Belfast Flax Society.

The first and most important is an experiment made by the brother of one of the most extensive Flax-spinning firms in England, Messrs. Marshall and Co., Leeds, and as the owner of the largest works for preparing Flax-straw in this country, and as money is no object when the best machines can be got, his experiments must command attention.

“Leeds, 27th July, 1850

“Messrs. A. Bernard and Kock,—I now enclose a statement of the result of the experiment with Dutch Flax straw, which I think is favourable to the hot water steeping.—(Signed) ARTHUR MARSHALL.”

The experiment with the Dutch Flax-straw was made from a crop in 1849.

The same lot was divided into three parts—one was steeped in Holland in the open pools, and hand-scutched; another was retted in Cregagh, Belfast, and mill-scutched; the third at Patrington, also by the patent process, but was retted twice, likewise mill-scutched.

RETTED.	Weight.		Loss of weight pr cwt. being scutched.	Weight.		Yield per cwt.	Yield from hackle per cwt.	Value of Flax per cwt.	Comparative value per acre.	Grey thread.	Colored thread.	White Brown thread.	bleached thread.
	Before Retting.	After Retting.		Before being scutched.	After being scutched.								
In Holland..	cwt. lbs. 49 7	cwt. lbs. 40 7	18.9	cwt. lbs. 40 3	cwt. lbs. 7 4	18.4	61.1	s. d. 55 10	188	7.7	7.8	7.6	6.9
At Patrington													
Yorkshire..	12 3	9 8	20.5	9 5	1 5	15.7	64.0	74 10	210	7.7	7.9	7.4	7.0
At Cregagh,													
Belfast....	12 5	10 2	91.8	10 2	1 8½	18.1	62.4	63 10	214	7.8	7.2	7.5	6.7

Mr. Marshall explains as follows:—"The acreage of the field on which the Flax was grown is not exactly known, but the value per acre may be taken as correct in regard to the proportionate value of each experimental lot.

"The low yield from the Flax scutched at Patrington is owing, most likely, to defective scutching.

"The strength of the thread much as usual; the value of Flax per cwt. of that retted in Holland, the invoice price at which it was bought; the other two values fixed in proportion to the comparative values of the dressed Flax."

From the preceding statement it is evident that Mr. Marshall reduced 12cwt. of green straw into 9cwt. when retted, and produced only 1cwt. 5lbs. of fibre. As other experiments appeared in the Flax Society's reports, the result of each must be interesting to Flax-growers. Schenk's patent hot water and the old cold water system has been reported to produce from $1\frac{3}{4}$ lbs. to $2\frac{1}{2}$ lbs of fibre out of 14lbs. of retted straw, the following has been calculated accordingly in order to prove the production from the several modes of preparing Flax for market.

By Mr. Marshall's hot water experiment, 10cwt. 1qr. 25lbs. would not produce more than 102lbs. of fibre.

By Mr. Andrews' hot water experiment, 10cwt. 1qr. 25lbs. would not produce more than 115lbs. of fibre.

By Mr. W. Adam's hot water experiment, 10cwt. 1qr. 25lbs. would not produce more than 126lbs. of fibre.

By Mr. Warne's cold water experiment, 10cwt. 1qr. 25lbs. would not produce more than 122lbs. of fibre.

By Mr. Dickson's patent machines and patent liquid, 10cwt. 1qr. 25lbs. produce 336lbs. green Flax and 84lbs. of tow; total, 420lbs. Deduct 25 per cent. as waste in boiling in the liquid, 104lbs., leaving 316lbs. of perfectly white fibre. It thus appears that Mr. Arthur Marshall, at Patrington, produced out of 12cwt. 3lbs. of green straw, 1cwt. 5lbs. of scutched, and 64lbs. of hackled Flax; and at Belfast, out of 12cwt. 5lbs. of green straw, 1cwt. $8\frac{1}{2}$ lbs. scutched, and 62lbs. of hackled Flax. Dickson's patents at Deptford produced, from 12cwt. of green straw, 4cwt. 1qr. 4lbs. of scutched, and 245lbs. of hackled Flax.

Looking at the above experiments, which I quote as an example of what others have produced from a given quantity, I am prepared to prove the working of my patent machines and liquid as follows :—

One ton of green Flax-straw will produce, when prepared by my machines, 640lbs. of long Flax, worth $4\frac{1}{2}$ d. per lb., or £42 per ton, for rope or twine makers	£12	0	0
And 106lbs. of tow, worth 3d. per lb., or £18 13s. 4d. per ton to paper makers.	1	6	6
	£13	6	6

Expenses in preparing for market.

By cost of Flax-straw, one ton. . .	£4	0	0	
Cost of preparing	2	3	0	
				6 3 0

Nett profit, if the Flax is sold in the green state . . . 7 3 6

If the Flax be prepared by the patent liquid, the result will be as follows :—

The 480lbs. of long Flax will sell for 11d. per lb., or £102 per ton, on an average	£22	0	0
The 120lbs. of tow will sell for 8d. per lb., to mix with sheep's wool	4	0	0
Total, 600lbs.	£26	0	0

PARTICULARS OF THE PRODUCE OF FLAX, HEMP, AND VARIOUS INDIAN FIBRES.

PREPARED BY DICKSON'S NEW PATENT MACHINES AND PATENT LIQUID, WITH PRICES AFFIXED TO EACH AND ALL, TO SHOW THE ADVANTAGE OF MACHINERY WHEN PROPERLY ADAPTED TO THE PREPARATION THEREOF.

No. 1. Green unretted English Flax, which cost when broken and scutched by the machines from £28 to £30 per ton.

14lbs., or one stone, prepared by the liquid, produced, long Flax	lbs.	ozs.
	9	0
Tow	2	0
Waste	3	0
	14	0

The long Flax, worth 12s. per stone, or £96 per ton.

The Flax wool „ 2s. „ or £16 per ton.

No. 2. Irish retted (Armagh) hand-scutched Flax cost £40 per ton,

14lbs (half-clean), prepared by the liquid,	lbs.	ozs.
produced, long Flax	8	7
Tow	2	4
Waste	3	5
	14	0

The long fibre is worth 13s. per stone, or £104 per ton.

The wool is worth 7s. 6d. „ or £60 per ton.

No. 3. Egyptian Flax, which cost £30 per ton.

14lbs. half-clean Flax prepared by the liquid,	lbs.	ozs.
produced, long Flax	8	0
Tow	1	14
Waste.	4	2
	14	0

The long Flax is worth £60 per ton.

The tow is worth . . . £30 per ton.

No. 4. Friezland Flax, which cost £48 per ton.

14lbs. prepared by the patent liquid, pro-	lbs.	ozs.
duced, long Flax	8	9
Tow	2	8
Waste	2	15
	14	0

The long Flax is worth £80 per ton.

The wool is worth . . . 56 per ton.

No. 5. Dutch Flax, which cost £70 per ton.

14lbs. prepared by the patent liquid, produced,	lbs.	ozs.
long Flax	8	6
Tow	3	1
Waste	2	7
	14	0

The long Flax is worth £100 per ton.

The wool is worth . . . £56 per ton.

No. 6. Archangel Flax which cost £68 per ton.

14lbs cleaned and prepared by the patent	lbs.	ozs.
liquid, produced, long Flax	8	4
Tow	2	7
Waste	3	5
	14	0

The long Flax fibre is worth £120 per ton.

The wool is worth £56 per ton.

No. 7. Italian Hemp, which cost £50 per ton.

14lbs. broken, scutched, and prepared by the	lbs.	ozs.
patent liquid, produced, long hemp . .	10	14
Tow	1	9
Waste	1	9
	14	0

The long fibre is worth £70 per ton.

The tow is worth £36 per ton.

No. 8. Belgian green unretted Flax.

14lbs. of this straw prepared by the machines	lbs.	ozs.
produced of long green fibre	5	2
Tow	0	8
Total . . .	5	10

No. 9. Belgian retted Flax-straw.

14lbs by the machines alone produced, of	lbs.	ozs.
long fibre - - - - -	2	15
Tow - - - - -		13
Total . . .	3	12

No. 10. New Zealand Flax (*Phormium Tenax*), which was sent by the Society of Arts, who offered fifty guineas

premium over the selling price of the machine best calculated to prepare it. I had no patent then in 1855 for New Zealand, and refused any information on the subject, but now in November 1864, I am determined on having a patent, as I have made New Zealand Flax worth £40 to £50 per ton, by machinery, without any liquid process. The article is gathered by the natives and sold in Auckland by them at £10 per ton, and as the New Zealand government has taken the wise and business-like course to cause the fibre plants of the country to be brought into a state for exportation to England by an offer of a reward of £2,000 to the first person who will by his own invention produce 40 tons of the *Phormium Tenax* so prepared as not to exceed £25 per cwt: in cost making ready for market, and £1,000 reward to the next five persons who may join and work up 20 tons by anyone's invention so as to produce the same advantage. Such rewards has induced me to "try again," and the result of my labours on a bale sent me by Messrs. Gibbs, Bright, of Liverpool, has caused me to receive from one of the best judges of Flax in England the following letter:—

"Alma Terrace, Kensington, Oct. 17, 1863.

"DEAR SIR,—The sample of New Zealand Flax (*Phormium Tenax*) you have sent me may be worth from £40 to £50 per ton for coarse spinning purposes, but much depends on how it turns out in hackling; the finer quality is in my opinion worth about £60 per ton.

"Yours truly,

(Signed) "J. R. W. ATKINSON.

"Mr. J. H. Dickson."

Mr. Atkinson is the retired partner of the firm of Messrs Hives and Atkinson, Flax-spinners, Leeds, whose yarns are not equalled by any firm in the trade, therefore, such an opinion must be sufficient evidence of the value of my machines and process.—J.H.D.

		lbs.	ozs.
The 56lbs. sent produced by machinery, of clean			
long fibre, unretted, worth £60 per ton		17	7
Short fibre, unretted, worth £36 per ton -		6	14
Tow, unretted, worth £30 per ton - -		9	2
Waste, in dressing - - - -		22	9
Total . . .		56	0

The above Flax when prepared by the new liquid I now use is as fine as Dutch Flax at £70 per ton.

ADVANTAGES OF WEAVING BY POWER LOOMS.

An anonymous correspondent having assumed the right, through a Belfast newspaper, to condemn power-loom weaving establishments as likely to be ruinous to hand-loom weavers in Ireland, I took up the cause of progress, preferring railway speed to the old four-horse coach practice. As I was the first to introduce into Belfast, a power-loom, on which we wove prime goods in 1838, I was induced to send the following letter:—

To the Editor of the “Banner of Ulster.”

“SIR,—In your paper of the 3rd instant I observe a letter from ‘Amicus Pauperis,’ on the subject of power-looms. He represents himself as the mouth-piece of the weavers of Clough and Ballymena, and states that ‘the report of linen-cloth being made by power-looms for 6s. the piece of 52 yards, while hand-loom weavers are obtaining 16s. per piece, has caused considerable anxiety to weavers in that district.’ I feel anxious, therefore, from a desire to see the linen-trade of Ireland so extended as to supersede cotton-shirtings, to remove your anonymous correspondent’s doubt, and partially to prepare the weavers for what I hope soon to see, viz., a factory for weaving by power-looms on every two square miles of Ulster where the work may be carried on, to the discomfiture

of those who, when potatoes are cheap, get behind ditches to enjoy their smoking propensities, and attend fairs and markets in idleness, often keeping the yarns of two or three manufacturers sometimes for months in the loom and house before returning them. I speak from experience, and I know the necessity and advantage that must be derived by the spread of the power-loom, in preference to the unsafe and uncertain supply which linen manufacturers are obliged to depend on, from distributing yarns ten or fifteen miles round about and removed from their residences. I hope I may be favoured with space in your widely circulated journal, in order that my views, if thought sound, may serve the cause I advocate.

“It is well known in Ballymena, Maghera, Gracehill, and Ahoghill, that the firm of Ledwich and Dickson built a large establishment in the latter place, and in 1837, 1838, and 1839, employed more weavers than any four houses in that district in making 4-4ths and 7-8ths linen from 12⁰⁰ to 22⁰⁰, both light and heavy cloth, in addition to having often above 1,000 in Banbridge, Lurgan, and the neighbourhood, making plain and fancy drills, damasks, diapers, and lawns. I presume I may say (as I was the working man of that firm) that I have some practical knowledge on the subject. Our orders for goods were considerable, and frequently we could not execute them in reasonable time, owing to the delay of cloth in the weaver's hand. On looking over our books in the harvest of 1838, I found we had such a quantity of yarns in the hands of weavers that, when added to about £4,000 worth of boiled stock in our warehouse in Donegall-street, ready to be given out, the interest on the money locked up in yarns so distributed was more than a moderate profit would cover. I then resolved on having a factory and power-looms, confident that I could overcome the supposed difficulty in making good selvages, and equally confident, from inquiry and calculations, that I could turn out more goods in twelve

months with 100 power-looms and £2,000 capital, than we could get in twelve months from 1,000 hand-loom weavers and a capital of £6,000 employed. Having determined on making a trial, I brought prepared linen and drill-warps and wefts with me to Leeds, and had one of the best put to work. I superintended the alterations and improvements that we found requisite, until we had the loom perfect, and in three weeks I returned to Belfast with a linen-drill and a linen-web, both being perfect in selvage and centre; they were not as eye-sweet* as the hand-made cloth, because of the want of tallow and potatoes, and flour-dressing that weavers rub into linens and drills, consequently the slubs and imperfections in the yarns were not hid, as is the case in hand-weaving, but the yarns were driven evenly by the same constant force, and when bleached and finished, the drill in particular, was superior to the same made by hand. Being satisfied with the loom, I ordered 100, and commenced the erection of a factory on the Blackstaff riverside, the shell of which cost £1,100 and upwards, and had not the storm on the 6th of January, 1839, levelled the entire premises, we must have been successful in adopting the power-looms, as we had no difficulty to overcome.

“Your correspondent appears alarmed at the supposed misery and starvation which he thinks must follow the introduction of power-looms, forgetting that skilled hands must attend them, and that the weaver’s children will also have employment. He overlooks the fact that if 10s. can be taken off the price of weaving a 20^{oo} linen, which I calculate is now made for £2 9s. 11d., or 13³/₄d. per yard in the brown state, and the boiling and bleaching dispensed with, which will reduce it to 11d. per yard, and equal reduction on 14^{oo} linen, which appears to cost £1 12s. 8d., such goods will only cost

* Not so clear of slubs, or knots, as the hand-woven cloth.

6d. per yard : and if my system of preparing Flax be adopted, boiling yarn and bleaching cloth must be dispensed with, and a saving of from 3d. to 4d. per yard effected. If manufacturers persevere with the introduction of power-looms, the cotton rags of Manchester now used as shirting will soon be thrown aside to make room for a superior article, viz., 12⁰⁰ Irish linen at 6d. per yard, and 20⁰⁰ at 11d. per yard for shirt breasts, &c. Had your very enterprising and spirited townsmen, Messrs. Mulholland, Hind, and Herdman (who were the first to put a stop to the linen trade of Ireland being taken away to Leeds, Barnsley, and Dundee) been frightened by erroneous and imaginary feelings of benevolence, and fears that their spinning-frames would have prevented the old women of Clough, Ballymena, Strabane, or Keady (all so celebrated for hand-spinning) from earning their tea and toast money, without such machines creating, as they have done, much more than an equivalent—their factories, which are now the imposing and commanding ornaments of your city, located in York Street, Durham Street, Smithfield, and Falls and Crumlin Roads, with their many thousands of hands employed, would not have been erected : nor would they have induced so many others to follow their example—all of which causes many thousands to visit Belfast on business, who otherwise would not have seen it, unless, perchance, they came to emigrate for another land.

“ Again, the poor man’s professed friend says the linen trade is ‘ universally admitted to be the cause of prosperity in Ulster.’ No doubt it is, and will be more so. If there were twenty power-loom factories from Belfast to Ballymena, thirty between it and Armagh, and twenty between it and Banbridge, those weavers who always lost Saturday in Ballymena, and generally another day in the week looking for work, would find constant employment and not lose one hour. The steam-engine never gets fatigued in

plying the shuttle, whilst the loom works from six to six o'clock, and if attended properly, more than treble the quantity of linen would be produced, with less than half the capital required in hand-loom weaving. Would Manchester, with its palace-like warehouses, ever have arrived at the eminent position it can boast for wealth and production, if they had confined their manufactures to hand-loom weaving? or would the London shop-windows be crammed, as they undoubtedly are, with cotton shirts and indispensable linen fronts (because they will not be purchased without linen fronts) at 3s. 6d. to 5s. 6d. each, to supersede, as they have done, Irish linen? No, sir, it is to the power-loom alone that Manchester owes its greatness; and those who have read the history of Lancashire and Yorkshire, and watched the increase of the commerce and population of Belfast, must admit that the more machinery can be got to do the work of spinning and weaving, the cheaper the goods must be made, the more they must come into use and find their way to the gold and other regions, where such arts are unknown, or if known, not followed as a matter of business, as more profitable and easy employment is to be had in abundance.

“Another advantage in factory labour is, that girls and boys who rove about in the country in idleness, only winding bobbins for their father a few hours in the day, whilst *he*, their only provider, toils from six in the morning to ten o'clock at night, may earn nearly as much as he can. If such is not the case, how could the factory workers in Manchester go to the market on a Saturday night, and pay 6s. for a fat goose, or 7s. or 8s. for a turkey, such as can be had in Belfast for 3s. to 4s. each? It often happens that a sober, industrious man, having a family brought up similarly, can soon elevate himself above the toil of hard work; whilst the less industrious man, who has *no family*, must work on *all his life*. I have known many industrious weavers in Ireland very poor and badly off

from having large and unemployed families depending upon them alone for support. The hand-loom weaver, who is so short-sighted as to fear the introduction of power-looms and would prefer the *slave-like* life and system of weaving in a smoky cabin, sooner than he and his family should walk a mile to work in a warm but well-ventilated, clean factory, is only fit to sit in his cabin and feed geese for those in Manchester who know how to earn what they will have—a good living.

“A girl or boy, with a few month’s practice, can attend on two looms in weaving from 9⁰⁰ to 14⁰⁰ linens. I have seen them do it in Messrs. German, Petty, and Co’s factory in Preston, and earn from 6s. to 9s. per week.

“Strong 14⁰⁰ shirting linens can be made from my white Flax for 7d. per yard, and a light 14⁰⁰ for 6d. per yard, and being confident that either will be better and stronger than the same quality of goods made from grey yarns spun from retted Flax, which must become considerably lighter and weaker from being first boiled and then bleached, I would just ask the British and Irish farmers and tradesmen why they continue to wear cotton shirts when they can be so much better served with linen, the production of our own country, and at all but the same price? The mistake has arisen from two false ideas, viz., that linen cannot be made to compete with cotton, and that cotton is the healthier of the two materials. I feel confident that six linen shirts, at the prices named below, will wear longer than nine cotton shirts at the prices quoted:—

COST OF A LINEN SHIRT.

3 yards 4-4ths 14 ⁰⁰ linen, at 7d. per yard. . . .	£0	1	9
$\frac{1}{2}$ yard of fine linen for fronts, etc., ...	0	0	10
Thread and buttons.	0	0	2
Making	0	1	0
	£0	3	9

COST OF A COTTON SHIRT.

3 yards of cotton, 6d. per yard	£0	1	6
$\frac{1}{2}$ yard of linen for fronts	0	0	6
Thread and buttons	0	0	2
Making	0	1	0
	£0	3	2

“I will undertake to establish the fact,* that this linen shirt will be a superior article to those in the London shop-windows, marked at from 4s. 6d. to 5s. 6d. each. If such can be proved, it is the duty of every man of influence in the kingdom to encourage, to the utmost of his ability, the cultivation of Flax and such home-made goods. Hoping that such may deserve your attention,

“I am, Sir, your obedient servant,

“J. HILL DICKSON.

“Flax Works, Grove Street, Deptford.

“London, Dec. 18th, 1856.”

The above letter was inserted in the Belfast newspaper, but no attempt was ever made to *answer it*. In fact it was *unanswerable*, and I am now informed that there is one firm has not less than 1,000 power-looms at work, and many others are now adding to them every week more and more.

Looking back at the ups and downs of firms in the linen and cotton trade since 1839, and the views I had then (which have never changed) that linen could be made to take the place of cotton, I am thoroughly certain, that if I had remained in Belfast, and urged my practical views on men of spirit in that enterprising city, the linen trade of Ireland would have been, through the use of the power-loom alone, five, if not ten years in advance compared to what it is, but

* The calculation on linen and cotton cloth was made in 1858, therefore it is evident such cotton cannot be got now in 1864 at 6d. per yard.

our heavy losses through shipping houses disgusted men with the trade, and I left for London in 1842—against the advice of all my friends in Ireland, to fight the battle of life, which is no easy task for an Irishman in London, unless he has capital at command—for there is no mistake as to Cockney prejudice against him.

The white yarns noticed below are from Gregeen and Dickson's new patents, protected December 1857, and sealed December 1858.*

As my object is to show how linens can be made to supersede cotton-shirtings, I have looked over my old scale of making them, in order that those interested may see the advantage which I assert can be gained by my patent process in preparing Flax for spinning by machinery, and weaving by power-loom.

Cost price of 4-4ths strong linens by hand-loom weaving:—

9 ⁰⁰ 30 hanks warp, 25 tow, 3½d. per hank	£0 8 9
32 hanks weft, 30 tow, 3d. per hank	0 8 0
62	£0 16 9
Boiling	0 1 3
Warping and winding	0 0 10½
Hand-weaving	0 7 0
	£1 5 10½

Or 6d. per yard, BROWN.

9⁰⁰ Cost price by power-loom of Dickson's patent white Flax-yarn:—

62 hanks yarn	0 16 9
Warping and winding	0 0 10½
Power-loom weaving	0 3 0
	£1 0 7½

Or 4¾d. per yard, WHITE.

Dr. Cregeen's only claim on J. H. Dickson's patented discoveries arises from his being the assistant in the liquid process of making oil into a softening and bleaching liquid, by the use of ammonia.

12⁰⁰ 40 hanks, 30 Flax-yarn, at 4½d. per hank £0 15 2
 42 hanks, 50 Flax-yarn, at 3d. per hank. 0 10 6

82		£1	5	8
	Boiling	0	1	9
	Warping and winding .	0	1	3
	Hand-weaving	0	9	0
		£1	17	7

Or 8¾d. per yard, BROWN.

12⁰⁰ Cost price, by power-loom, of Dickson's patent white Flax-yarn :—

82 hanks	£1	5	8
Warping and winding .	0	1	3
Power-loom weaving . .	0	3	0
	£1	9	11

Or 7d. per yard, WHITE.

14 ⁰⁰ 46½ hanks, 40, at 3½d. per hank . . .	£0	13	5
48 hanks, 60, at 3d. per hank	0	12	0
94½	£1	5	5
Boiling	0	1	11½
Warping and winding.	0	1	2½
Hand-weaving	0	11	0
	£1	19	7

Or 9¼d. per yard, BROWN.

14⁰⁰ Cost, by power-loom, of Dickson's patent white Flax-yarn :—

94½ hanks, yarn . . .	£1	5	5
Warping and winding.	0	1	2½
Power-loom weaving . .	0	3	6
	£1	9	7½

Or 7d. per yard, WHITE.

Cost, by hand-weaving, of 4-4ths light linens :—

9 ⁰⁰ 30 hanks of 35 Flax-yarn at 3 $\frac{3}{4}$ d. per hank	£0	9	4
32 hanks of 45 Flax-yarn at 3d. per hank	0	8	0
62	£0	17	4 $\frac{1}{2}$
Boiling	0	1	3
Warping and winding.	0	0	10 $\frac{1}{2}$
Hand-weaving	0	6	0
	£1	5	6

Or 6d. per yard, BROWN.

9⁰⁰ Cost, by power-loom, of Dickson's patent white Flax-yarn :—

62 hanks of yarn . . .	£0	17	4 $\frac{1}{2}$
Warping and winding.	0	0	10 $\frac{1}{2}$
Power-loom weaving . .	0	3	0
	£1	1	3

Or 4 $\frac{1}{2}$ d. per yard, WHITE.

12 ⁰⁰ 40 hanks, 50, at 3 $\frac{1}{4}$ d. per hank . . .	£0	10	10
42 hanks, 60, at 3d. per hank	0	10	6
82	£1	1	4
Boiling	0	1	8
Warping and winding.	0	1	0
Hand-weaving	0	6	6
	£1	10	6

Or 7d. per yard, BROWN.

12⁰⁰ Cost, by power-loom, of Dickson's patent white Flax-yarn :—

82 hanks	£1	1	4
Warping and winding.	0	1	0
Power-loom weaving . .	0	3	0
	£1	5	4

Or 5 $\frac{1}{2}$ d. per yard, WHITE.

14 ⁰⁰ 46 $\frac{1}{2}$ hanks, 60, at 3d. per hank . . .	£0	11	7 $\frac{1}{2}$
48 hanks, 70, at 2 $\frac{3}{4}$ d. per hank . . .	0	11	0
94 $\frac{1}{2}$	£1	2	7 $\frac{1}{2}$
Boiling	0	1	11
Warping and winding.	0	1	2
Hand-weaving	0	7	0
	£1	12	8 $\frac{1}{2}$

Or 7 $\frac{1}{2}$ d. per yard, BROWN.

14⁰⁰ Cost, by power-loom, of Dickson's patent white Flax-yarn :—

94 $\frac{1}{2}$ hanks	£1	2	7 $\frac{1}{2}$
Warping and winding .	0	1	2
Power-loom weaving .	0	3	2 $\frac{1}{2}$
	£1	7	0

Or 6 $\frac{1}{2}$ d. per yard, WHITE.

IRISH SCUTCH-MILLS.

As the prosperous condition of the north of Ireland is chiefly attributable to the increase of the cultivation, and the spinning and weaving of Flax, I must next call the reader's attention to the increase of machinery for its preparation, and the necessity for such increase.

In the Appendix to last year's Report, a voluminous government return was given, collected at the suggestion of the society, showing the number, position, and number of stocks, in mills for scutching Flax, in each county, barony, and parish of Ireland, in the year 1852. The return was given thus fully, as it was the first ever made. This year it is not necessary to go into such minute particulars, it being sufficient to show the number of mills and of stocks in each county in 1853, as compared with 1852. The following table will furnish this information :—

NUMBER OF SCUTCH-MILLS AND OF STOCKS IN IRELAND,
1852 & 1853.

	No. of Mills.				No. of Stocks.			
	1852	1853	Incr.	Decr.	1852	1853	Incr.	Decr.
ULSTER.								
Antrim . . .	90	103	13		432	631	199	
Armagh. . .	98	111	13		724	808	84	
Cavan . . .	8	10	2		46	56	10	
Donegall . . .	227	251	24		945	1034	90	
Down . . .	174	186	12		959	1234	275	
Fermanagh. . .	9	10	1		48	50	2	
Londonderry . .	155	168	13		698	761	68	
Monaghan . . .	45	50	5		270	307	37	
Tyrone . . .	110	127	17		528	633	105	
Total Ulster.	916	1016	100		4650	5514	865	
LEINSTER.								
Louth . . .	7	6		1	66	67	1	
Longford . . .	1	1			8	8		
Meath . . .	4	5	1		26	34	8	
Queen's . . .	1	1			6	6		
Westmeath. . .	2	0		2	6			6
Wexford . . .	4	5	1		22	29	7	
Total Leinster	19	18	2	3	134	144	16	6
MUNSTER.								
Cork . . .	8	10	2		82	114	32	
Limerick . . .	2	2			34	18		16
Tipperary . . .	4	3		1	24	17		7
Waterford . . .	1	2	1		12	16	4	
Total Munster	15	17	3	1	152	165	36	23
CONNAUGHT.								
Galway . . .	1	1			6	6		
Mayo . . .	1	1			8	12	4	
Sligo. . . .	4	3		1	31	29		2
Total Connaught	6	5		1	45	47	4	2
Grand Total Ireland.	956	1056	105	5	4981	5870	921	31

In the returns for 1853, an interesting table is appended, showing the number of weeks during which each scutch-mill was at work in that year. From this we have compiled the

following table, giving the number of stocks instead of the number of mills:—

TIME TABLE OF IRISH SCUTCH-MILLS, 1853.

	Under 10 weeks.	11 to 15 weeks.	16 to 20 weeks.	21 to 25 weeks.	26 to 30 weeks.	31 to 35 weeks.	36 to 40 weeks.	41 to 45 weeks.	46 wks. and up- wards.
	stocks.	stocks.	stocks.	stocks.	stocks.	stocks.	stocks.	stocks.	stocks.
ULSTER.									
Antrim . .	70	140	157	63	96	57	8	6	4
Armagh . .	18	130	136	134	192	36	18	12	38
Cavan . .	2	6		6	4	18	6	8	6
Donegall . .	61	138	208	153	246	20	104	11	16
Down . .	36	236	239	156	212	77	105	57	16
Fermanagh .	11	9	12		6	12			
Londonderry	17	111	199	97	145	108	57		4
Monaghan .	6	16	94	56	28	33	56	4	10
Tyrone . .	11	24	98	61	211	62	88	14	11
LEINSTER.									
Longford . .					8				
Louth . .	8		8	3	4				44
Queen's . .					6				
Meath . .		4	36			6			
Wexford . .	4		12		11			2	
MUNSTER.									
Cork . .	12		3		3		8	14	41
Limerick . .	4							14	
Tipperary .			3						8
Waterford .	4							12	
CONNAUGHT.									
Galway . .					6				
Mayo . .	12								
Sligo . .	16	13							
Total .	292	827	1205	729	1178	429	450	154	198

The proportion of the whole number of scutching-stocks to each of these sections, is as follows:—

$5\frac{1}{2}$ per cent. worked less than ten weeks.

$15\frac{3}{4}$	„	„	11 to 15	„
$22\frac{1}{4}$	„	„	16 to 20	„
14	„	„	21 to 25	„
$18\frac{1}{2}$	„	„	26 to 30	„
$8\frac{1}{4}$	„	„	31 to 35	„
$8\frac{1}{2}$	„	„	36 to 40	„
3	„	„	41 to 45	„
$3\frac{1}{4}$	„	„	Upwards of 45	

RUSSIAN HEMP AND FLAX V. ITALIAN HEMP
AND INDIAN FIBRES.

To make more public the merits of my patent machines, and patent liquid process, I invited a number of London and Liverpool merchants, in the summer of 1855, to witness my mode of operating on Bombay hemp, by re-dressing through the machines. Also working on Italian hemp, in the green unretted stalks, 12ft. long, and green Flax-straw. Amongst those present I had Mr. Crisp, the proprietor of the *Agricultural Magazine*, who gave the following report:—

“ We have great pleasure in being able to call the attention of landed proprietors, and British farmers especially, to a subject that has just commanded our own immediate observation, and which most assuredly deserves also their serious consideration, inasmuch as, from all we are given to understand, Italy has been going a-head of us for the last twelve months, by stepping in and contracting to supply Her Majesty’s government with hemp for naval purposes, and thus, as it were, to be the very first to order, as well as to export, the original and only machines ever invented in this country that will finally prepare and furnish hemp and Flax without skilled labour, and (what is of far more importance) without steeping, consequently decomposition is wholly avoided, and the fibre is thus left in its natural state uninjured, and more than one-third in weight is obtained.

“ We have inspected Flax, Hemp, Indian Rhee, China and Assam Grass, Pine Apple, Aloe, and other fibres, prepared in large quantities, at the office in the city, and also at the Works of the Patentee, Mr. J. Hill Dickson, Grove Street, Deptford, and have no hesitation in saying we could not have imagined the improvements possible. We have no doubt of the immense value of the invention, and recommend that those concerned in the commercial and agricultural interests

of this country should, like us, visit Mr. Dickson's Works, and they will be repaid for their trouble.

"We understand a firm in Brussels is negotiating for Mr. Dickson's Belgian and Dutch Patents at £10,000 each, and a French firm, for the French Patent at £10,000. We know the Patentee has for many years been trying to bring out his useful inventions, and having succeeded, we are glad to hear that he is about to reap the full reward of his arduous and praiseworthy labours.

"During our visit we saw Bombay Hemp, valued at £15 per ton in Liverpool, prepared by Mr. Dickson's machines, in the presence of several London and Liverpool merchants, hemp and Flax brokers, and Messrs. Stevens, Brothers, Bombay Merchants, and in a few minutes it was made worth (as valued by a broker) from £36 to £38 per ton. Green unsteeped Belgian Flax-straw was broken, scutched, and hackled, and a marketable clean long fibre produced, in an incredibly short time. The machines are so simply constructed, that a boy or girl may learn how to attend them in one day. This Bombay Hemp was sold in London at £34 10s. per ton, and also in Liverpool at £35 10s. per ton, by Mr. Bencke, Broker. The large profit arising from this practical exhibition of the invention, has enabled the patentee to arrange with large capitalists for more extensive operations, by dividing the profits in working his patent machines. He is now preparing fibre from the INDIAN ALOE PLANT, which cost £10 per ton in Liverpool, and £4 per ton for re-dressing it, and it has been sold in London at Brokers' Auction, at £28 per ton."

The above, together with the following paragraph, appeared in a North American Newspaper, the *Chronicle and News*, Kingston, Canada, on Friday the 11th of October, 1855.

"HEMP AND FLAX.—We find in the London *Agricultural Magazine, Plough and Farmers' Journal*, for August, the above

description of Mr. J. H. Dickson's patent for dressing Flax and hemp. Mr. Dickson is a brother of Mr. A. Dickson, formerly of this city, and now of Fruitfield, Clark's Mills, Kingston.

The following results have been proved by the working of Dickson's patent liquid process, in the presence of several London Flax merchants and brokers. Samples are to be seen at the office of the Cotton Supply Association, Manchester. Rhea and Flax cottonized, and as capable of being spun on the existing cotton machinery as Sea Island cotton, and also the yarn spun and the cloth made from it has been sent there several times.

English Flax-straw, green and unretted, 112lbs. produced by machinery alone 22lbs. of long, perfectly clean green fibre, worth £56 per ton; 9lbs. of fine tow, perfectly clean green fibre, worth £30 per ton; and 5lbs. of rough, perfectly clean green fibre, worth £20 per ton—total, 36lbs. According to the above, it appears that $5\frac{1}{4}$ tons of dry Flax-straw, delivered at the works, say at £4 per ton, will produce 20cwt. 1qr. 14lbs. of clean long Flax; 8cwt. 4lbs. of fine tow; and 4cwt. 1qr. 24lbs. of rough tow. This green fibre, prepared by Dickson's patent liquid, has been valued at £100 up to £150 per ton, and the fine tow at 8d. per lb., by wool spinners. It is perfectly white, and equal in strength and quality to the best Belgian Flax, and being discharged of all the resin, it carries a high gloss, and has taken fast colours.

Egyptian half-dressed Flax—112lbs. at £29 per ton, produced by the machinery 74 $\frac{1}{4}$ lbs. of clean fibre, valued at £58 per ton; 25 $\frac{1}{2}$ lbs. of fine tow, valued at £30 per ton; waste, 12lbs. in re-dressing—total, 112lbs.

Friezland Flax—112lbs. at £48 per ton, produced by the machines 90lbs. of clean fibre, worth £70 per ton; 13lbs. of clean tow, worth £32 per ton; waste, 9lbs. in re-dressing—total, 112lbs. This Flax being rather green, from the

peculiar method of native preparation, and not being decomposed by the usual mode of retting, has been prepared by Dickson's liquid, and turns out to be equal, in strength and quality, to Flemish Flax at £100 per ton.

Archangel Flax—A sample of this, had from a merchant in the city at £62 per ton, produced fibre as fine as some kinds of silk, when prepared by the machines and liquid, and has been valued at £200 per ton for the long fibre, by a Flax importer.

New Zealand Flax—This was sent by the Society of Arts, who offer fifty guineas premium for the machine best calculated to prepare it. The 56lbs. sent produced by machinery 17lbs. 7ozs. clean long fibre, unretted, worth £60 per ton; 6lbs. 14ozs. short fibre, unretted, worth £36 per ton; 9lbs. 2ozs. tow, unretted, worth £30—33lbs. 7ozs; waste, 22lbs. 9ozs. in dressing—total, 56lbs. The above Flax, when prepared by the liquid, is as fine as Dutch Flax at £80 per ton.

It is rather surprising that the people of Canada, with a population increasing at the rate of 45 per cent. in five years, do not appear to notice the advantages they may have by turning their attention to Flax-cultivation, when they must see by our English, Scotch, and Irish journals that Irish hand-scutched Flax, usually sold at from 5s. 6d. to 6s. per stone of 16lbs., is now 10s. 3d., and mill-scutched, formerly from 7s. to 9s., is now from 10s. to 16s.* per stone. The reader may form some idea of the rising prosperity of Canada by the following extract:—

“In the year 1842 the total revenue of Canada was £365,000; in 1850 it was £704,200; and in 1856 had reached £1,238,700. According to the census of 1851, the population was 1,842,260, and by that of 1857 it was

* The price in Armagh, 1864, is from 7s. to 9s. 6d. per stone for mill-scutched Flax, and 5s. 9d. to 8s. per stone for hand-scutched Flax.

2,571,437; an increase of 45 per cent. in five years. And even to this rapid rate of increase a prodigious accumulation is now to be given by the gold discoveries on the Pacific coast, and the consequent settlement of that region."

I feel quite satisfied that the maiden soil of that portion of our possessions would produce Flax of the first quality; and I have reason to hope that my brother, Alex. Dickson, now residing on his property at Fruitfield, Clark's Mills, Kingston, Canada West, will this coming spring make a trial of a few acres by my instructions, and send us some tons that we may be able to give the Canadians a good account of their productions.

The Flax-mill owners, Flax spinners, and those interested in the linen trade of Ireland, should know the value placed on these patent inventions in Italy. I published the following document, obtained from the agents of the company that purchased my right of patents for the Italian States. This company has had from me above £2,000 worth of my machines, all of which are now at full work.—See the *Banner of Ulster* newspaper.

PARTICULARS RESPECTING THE SALE OF J. HILL DICKSON'S PATENTS FOR PREPARING FLAX AND HEMP IN ITALY.

BY MESSRS. CURTI, PICCIOTTO AND CO., 8, CROSBY
SQUARE, LONDON.

A company was formed in Piedmont, for the preparation of hemp and Flax by Dickson's patent machinery and patent liquid process (on which see the printed reports in Dickson's possession). The company is for one million of francs, or £40,000, in 2,000 shares of 500 francs, or £20 each, all subscribed and paid first and second instalments. Curti, Picciotti, and Co., sold the patents to the company, and as a

consideration for the same, the company has stipulated to give them 500 paid-up shares, representing a value of 250,000 francs, or £10,000, to be delivered after the machinery has been erected, the process tried, and proved to be capable of yielding 10 per cent. on the cost of the material used. This is the contract, and is confirmed by the published statutes of the company, as approved by the government (see printed book in Dickson's possession). The machinery (Dickson's patent) was supplied by Curti, Picciotto, and Co.; and the establishment has been erected at the expense of about £10,000, and is now at full work on a large scale, after having proved the process to be highly successful, and promising much greater profit than 10 per cent. on the cost of materials. The samples of hemp, produced at a cost of £22 per ton, have been valued by London Flax brokers at £45 per ton.

The only stipulation is that 100 shares shall always be held by Mr. Curti, as (what is termed) the grant of the company; the other 400 shares being at the disposal of Curti, Picciotto, and Co.

The large (to some incredible) amount obtained for the patents, and a supply of machines by the agents that bought them from me, induced me to send to the *Banner of Ulster* letters from Genoa, Turin, and Brussels, before I asked him to notice the facts in his journal. He noticed the importance of my invention being appreciated first in a country so far behind England in enterprise as regards machinery.

I stopped to supply Curti, Picciotto, and Co., who were London merchants, with machinery, and five Italian merchants met me in Paris, and pressed me to take up the matter out of Curti, Picciotto, and Co.'s hands, to finish the supply of the machinery. The immediate failure of Curti, Picciotto, and Co., which caused £1,670 worth of acceptances to come back on me ended my supplying Italy with my machinery.

However, I have now new patents for Italy of a further improvement for cottonizing hemp, and as Italian hemp is finer and better material than the best Russian Flax for any purpose, and I have proved it at least 25 per cent. better and stronger than Russian hemp for ropes, in Her Majesty's dock-yard at Chatham. I shall push the matter in Italy, as having by my process done away with the old method of steeping Flax and hemp in ditches, I must succeed in establishing my method of preparing fibres in that country.

As I visited Cork in the summer of 1851, at the request of the present Earl of Bandon, and his brother, the Hon. Henry Boyle Bernard; the proprietor of the *Cork Reporter* gave me valuable assistance in stirring up a feeling in favour of Flax-culture, and the introduction of my patent machines. He knew that I laboured hard in the cause, and with his usual good feeling expressed a wish for my success, and at the end of seven years he gave the following notice of my new patents secured in 1857 and 1858, and the result from preparing Flax and Indian fibres, specimens of which I sent to Mr. Briggs, then my agent in Cork, expecting, as Lord Fermoy wrote to me to say, if I extended my business to Ireland, he would join in a company and try and get Mr. Dargan to join in it, but there is want of nerve as well as money in the south of Ireland; they should send their young to be nursed in the north, Belfast:—

From the "Cork Reporter," of Saturday, April 17, 1858.

"FLAX MARKET.—We are sorry to perceive that yesterday's Flax market was, from tardiness or carelessness on the part of the growers, or some other similar cause, not so successful as we had hoped it would have been. At its opening, there were but a few small lots, so insignificant as to be quite unworthy the attention of buyers. When the day advanced, and the buyers had left the market, some large lots were brought in, amongst which were 2 tons from Mr. Fugue, of

Youghal; 12cwt. from Mr. Henry Barry, of Middleton; and a great number of lots varying from 10 to 25 stones. It is much to be regretted that, although ample time for preparation and sufficient publicity in the local newspapers were given, the seeming want of attention on the part of holders made it an almost total failure. From the Bandon district, too, there was no supply, as the entire quantity had been previously purchased in the mills there by Russell and Company, of Limerick. We have to observe also, that although the quality of nearly the entire was good, there was some produced which was naively termed 'rascally stuff,' and that, although the farmers know very well that spinners do not buy Flax in a hackled state, preferring to do it their own way, there was a small quantity offered for sale in that state. There were some buyers from the north in attendance, and we fear that their disappointment will exercise a deteriorating influence on future markets. Yet, however gloomy this state of things may appear to several (and we are of the number), who watch with an anxiety almost painful the effect of every effort made to resuscitate, or preserve from further decay, the manufactures of Ireland, we believe that in this very article of Flax manufacture a brighter day is about to dawn. We had the pleasure of viewing some specimens of Flax and Indian fibre prepared by Dickson's patent process, which Mr. Biggs, agent to Dickson and Co., of London, kindly showed us, and which were exhibited some time ago to the Cuiverian Society, and they certainly were brought to a state of perfection which we would almost say cannot be surpassed, at the same time that the strength of the fibre is completely preserved. A new and important feature in Mr. Dickson's process is, that he is able from a rough Indian fibre, which is brought into our harbour as dunnage, and thrown away as useless, and which can be imported in large quantities at a comparatively trivial cost, to produce a vegetable silk, which none but persons the-

most experienced can distinguish from the animal fabric. In Lille the inventor met with encouragement, the article being especially applicable to the manufacture of hats, which is carried on so largely in France, and the black die which it assumes being found indestructible; but he preferred giving his own country the benefit that energy, properly applied, may derive from his discovery. We understand that the ingenious patentee is about establishing Flax and silk manufacture on a large scale in our country. To his efforts we heartily wish that success which his enterprise and his genius so eminently deserve."

The proprietor and the editor of the above *impartial* and *truly patriotic* journal, being both from the north of Ireland, are aware of the advantage of the Flax and linen trade to that province, and their columns have ever been open to me, *free of any charge*, for everything I wrote for insertion, calculated to promote in the south of Ireland similar branches of industry. The want of proper machinery has been, and ever will be, a barrier to the cultivation of Flax, until enterprising parties, like Lord Fermoy, put their energies forward and induce the owners of approved machinery to erect them in proper localities. C. H. Frewen, Esq., M.P., the owner of Innishannon, offered me, in 1851, 150 acres of land and a mill site in the village of Innishannon, at a very small rent for 99 years—the rent to be fixed by two friends—and a loan of £2,000 towards building a Flax-mill. However, his agent, the Rev. Mr. Somers Payne (so Mr. Frewen informed me) dissuaded him from carrying out his proposal, otherwise, the £5,000 that I have made and expended since 1852 on a factory and machinery, engines and plant, &c., in Grove Street, Deptford, would have been expended in Innishannon; and would have created a branch of industry that must have led to the reclamation of part of the three millions of peat bog spoken of by Mr. R. T. Hall, in his

work on *The Waste Land of Ireland*. Had Mr. Colthurst's example in the county of Cork been forwarded there, it could not fail to have produced luxuriant Flax, equal to that produced on the waste land in Holland, and on the banks of the Humber, in Yorkshire. Had that mill been erected to prepare Flax in Innishannon, the noise of the shuttle and the merry song of the weaver would have been generally heard in Bandon and Innishannon ; and once more the cottages of the poor would have been illuminated, as Pope says :—

“ Which not alone has shone in ages past,
But lights the present, and shall warm the last.”

Such were my anticipations and hopes in 1854. I then determined to do my part, and with the assistance of Mr. Frewen, then M.P. for East Sussex, to lay such a foundation of industry in Cork, as must have led to the rescue of many of my countrymen from the iron grasp of poverty. After getting an estimate, with plan and drawing of the mills at Innishannon, from a builder in Cork, I left that city at the request of Mr. Frewen, to meet him at his residence, either at Cold Overton Hall, Brickwall, Leicestershire, or at the Carlton Club, London. On my arrival home, I felt confident that I should successfully carry out my views. I consoled myself with sanguine expectations, but Mr. Payne (Mr. Frewen's agent) put his veto on my hopes and exertions. Ere I was two hours in London, Mr. Frewen's letter arrived, to inform me that he had (on the advice of Mr. Payne) changed his mind respecting the mill in Innishannon. Mr. Frewen doubtless thought (on the advice of his reverence), that a Flax-mill, giving employment to a hundred families from twelve years old and upwards, was *Malum prohibitum*. He was ill-advised, and his withdrawal from the proposal caused me *considerable expense, great disappointment, and loss*, by leaving Ireland at the time, more especially as a gentle-

man in Dublin offered to join me, and to give security for the £2,000 which was offered by Mr. Frewin, on eighteen houses in one of the principal streets in the city of Dublin, worth ten times the amount required by me. Flax has since risen in price more than one third in Ireland, whilst other agricultural productions of the kingdom are one-third lower in price.

After reading the above facts, is it not *Malum en se* to appoint a minister of any church a receiver of rent, or a director of bailiffs, to seize and distress, *not the rich, but the poor?*

I anticipated the growing demand for Flax would increase, and that this additional crop being brought into the course of rotation, and generally adopted by Cork farmers, would be a greater boon than the protection the Corn-laws was thought by many to confer on home-produce. It will, therefore, be admitted by every man interested in the linen-trade in Ireland, that my views were based on sound principles, and a thorough knowledge of the trade. As a proof, I quote the following from the *Cork Reporter*, December 17th, 1858:—

“CULTIVATION OF FLAX IN INDIA.

“The attention of firms engaged in the linen-trade is being directed to the importance of promoting the cultivation of Flax in India. The deficiency of the supply from present sources has been of late felt seriously, the quantity imported in the first ten months of the present year having been only 51,174 tons as compared with 79,746 tons in the corresponding months of last year. The crop in Ireland has fluctuated greatly during the last ten or twelve years. In 1846 the quantity produced was 28,000 tons, but in 1848 it fell off to 13,466 tons. In 1853 it increased to 43,874 tons, but in the present year it is little more than 21,000 tons. The foreign supply has also fluctuated. In 1835 the quantity of Flax imported was 37,092 tons; in the year following

76,456 tons; in 1837, upwards of 50,000 tons; in 1838, 81,314 tons. Nine years afterwards, in 1847, the total imports were 52,604 tons; in 1850, 91,146 tons; in 1851, 59,709 tons; 1857, upwards of 93,300 tons; while this year it is not expected to exceed 60,000 tons. The foreign countries from which the supply is principally derived are Russia (which has sent us in the last ten months 41,180 tons), Holland, and Belgium. These countries are themselves becoming large consumers of Flax, and it is even thought that in a few years they will be able to work up the greater part of their own produce.

“With regard to the cultivation of Flax in India, an appeal has been made to the government that Lord Stanley declines to take any further steps beyond those which have been already adopted by the Punjaub Government, who have of late years offered several prizes by way of encouragement to the natives to devote their attention to this branch of industry. It is stated that no part of India is so well adapted for the culture of Flax as the Punjaub. The most convenient port for shipment for Europe would be Kurrachee, which is now the point of arrival for large numbers of troops and quantities of stores. At present there is no export trade from Kurrachee, and if vessels could leave the port freighted with Flax instead of returning in ballast, additional employment would be given to the shipping trade in the East. The value of the trade resulting from the cultivation of Flax is shown by the following figures:—In 1857 rather more than £4,000,000 was paid for the 93,300 tons imported, and when there is added the amount paid for linseed-oil and oil-seed-cake, exclusively of that imported from the East Indies, the total is augmented to £7,000,000, which, it is urged, might have been as well expended upon Indian as upon Russian or Belgian produce. The formation of a Flax Supply Association is suggested, on the same plan as that already existing for increasing the supply of raw cotton.”

In 1851 I urged, with all the energy I possessed, the government of Lord John Russell, and Lord Clarendon (then the Lord Lieutenant of Ireland) the advantage of keeping the £7,000,000 in Ireland, by letters in the *Cork Reporter* and the Dublin newspapers. Would it not have been considered, then, great presumption and egotism on my part had I copied the mannerism of the Chancellor of the Exchequer, Mr. Disraeli, and said—"I will sit down now; but the time will come when you will hear me"* I avoided the rocks and breakers ahead, confident that, if I lived a few years, my feeble bark would then find its way through the tide of difficulties and dangers into smooth water. Has not the few years (in number thirteen), told the tale.

I shall not now dwell on the loss that Ireland has sustained in her agricultural and manufacturing resources, from the apathy of the representatives of the people of Ireland. M.P.'s can dictate terms to ministers if they will, and I ask those concerned in the agricultural and manufacturing interests seriously to consider their position and disadvantage now, from the decrease in growing Flax. It has been a heavy national loss. By the government reports 35,600 tons of Flax were grown in 1854, and it fell off to 14,475 tons in 1856. To avoid this calamity I have spent time and money from 1843 up to this December, 1858, being the unpaid advocate of a more extended cultivation of Flax, not only in Ireland, but in Great Britain. I felt confident that earnest endeavours in demonstrating the national advantages which must accrue to Ireland and England, must have

* I cannot but now look back to my expressed opinions in 1851—thirteen years ago—with some pleasure, because of my having repeated the same in 1858, and now seeing such proof in 1864 that I was right, and that Flax can be had for 5d. to 6d. per lb., whilst cotton stands from 1s. 6d. up to 2s. 6d. per lb. in our Liverpool markets. I think I should now have my feeble bark in the anticipated smooth water, even if I should be obliged to call on a government pilot, a man not easily got, unless through the rich and influential.

the effect of arousing attention in the minds of her philanthropic sons, and must result in the cultivation of a larger breadth of Flax than has yet been sown.

London, November 13th, 1864.

As this article on Flax-culture in India was compiled in 1859, when Flax got up to all but double the price it was in 1855, because of the falling off in Ireland from that time for three or four years, in consequence of the war with Russia, wet seasons, and other causes that I shall name, it will be seen I continued to hold fast to my opinion, as to the necessity for Great Britain and Ireland extending their acres to Flax cultivation at home, and I must now, in November 1864, respectfully ask the reader to turn back to page 89 or Letter II. in this work, addressed to the "Editor of *Eddowé's Journal*, May 31st, 1845," where I plainly tell the landowners that a time will come when the Manchester cotton-mill owners may be found in the same position as the cotton-mill owners were at one time in Belfast; obliged to turn out their old cotton machinery, and turn to Flax-spinning. Fortunately for Ireland, the American war must put an end to slavery, and cotton will never in our day be sold below *one shilling per lb.*, therefore, "England's want of cotton," is Ireland's opportunity for gaining an additional market for her Flax, if she will not spin it, and as Flax can be grown and sold at 6d. per lb., or £56 per ton, and will pay the grower better than oats, now is their time to place the *ancient linen-trade of Ireland* in the high position it held previous to the peace in 1815, when cotton crept in at a figure, (1s. 6d. per lb.) that soon cut out linen fabric, unless for shirt-fronts, collars, and wristbands, from the English as well as the continental markets, and as I have evidence of the fact that it can be spun, and has been slivered for me, and spun *as well as cotton*, on the existing cotton machinery, by spinners who could not

tell *what they were spinning*, whether it was Rheea fibre, hemp, or Flax. It matters not to farmers, how or on what machinery it is spun, for if a market be created in Liverpool extra to the great markets in Belfast and Leeds, so much the better for their interest, as Lancashire could spin *treble*, if not *five times more* than it is possible for Ireland to produce, if it be cottonized by my liquid process and machines.

I beg further to remark, in reference to my views in the year 1845, on the necessity of increasing Flax-culture, especially in Ireland, that I had such views greatly strengthened by the visit for one month of a relation of mine at my house in De Beauvoir Square in 1847, Dr. Corbett, nephew of my cousin, Dr. Samuel H. Dickson, of Charlestown, South Carolina, and grandson of the late Rev. Dr. Nelson, who emigrated from the north of Ireland in 1798, and, as in our several conversations on the slave question he argued that Dr. Dickson's slaves were better off for *food, drink, clothing, &c.*, than our factory hands, and made no secret of his views as to what was likely to take place between the Northern and Southern States of America, and that in case of any rupture that Manchester would be in flames from want of cotton. I from that moment took a more firm view of the object of increase of Flax, because I had been an eye-witness of the Manchester riots in 1842, when there was comparatively little to rouse the evil passions of the workpeople, and hoping to see the ancient linen-trade of Ireland again at the head of our export list of manufactures. I am now convinced, and it is evident that if the owners of property in Ireland will do their duty to their tenants, Flax fabric must get a hold once more on the feelings of the country in preference to cotton for house purposes, because of its cheapness and its durability compared with cotton.

The expressed opinions of my friend and relative, Dr.

Corbett, who appeared to be thoroughly acquainted with the history of his country, and the debates on the slave and other questions in Congress, which lead to the chances of the separation of the Southern States from the Northern, impressed my mind, year after year, in the belief that the Indian fibres, which turned up so fine in my hands, as well as Flax, would, in case of a scarcity of cotton, come in for many purposes into the industry of Lancashire; and now, if our Irish M.P.'s can be brought to see *their duty* to the farmers and starving labourers, whose wages in some districts average 8d. per day, and some 1s., and none above 1s. 6d., Irish Flax will be made to cut cotton out of the trade of Lancashire for house purposes, such as sheetings, table-cloths, towellings, shirtings, &c., as cotton cloths are only superior for outer garments for printing for female wear, whilst Flax for every other purpose is cheaper and more durable.

As Lord Wodehouse has now accepted the appointment of Lord Lieutenant of Ireland (as successor of the Earl of Carlisle, who did little, if anything in his time, towards promoting Flax-culture in Ireland), we must hope to see that his excellency will not give ear to the old, used-up (Castle) dictators, but use his own superior judgment, in planning how he may promote the employment of the people by working up the productions of the soil, to the highest state of value and perfection for exportation, and as a great increase in Flax cultivation has taken place this year, a matter created by the progressive moves on the part of landowners, we must hope that his excellency will see the necessity of forwarding the movement by having the so-called but absurdly named workhouses turned into factories, with machinery to prepare Flax for the farmers, a matter recommended by one of the most benevolent and patriotic noblemen in Ireland, the Marquis of Downshire—(see page 129)—when president of the Belfast Flax Society, at one of the

public dinners of that very excellent association, whose labours were of the highest importance to the spinners and manufacturers, and of the greatest benefit to Flax-growers in Ireland. Such will be a stepping stone to the solid rock foundation on which Ireland's greatness, as a producing country of manufacturing material, may be built, and never had any viceroy such an opportunity of seeing a work in its infancy so successfully finished as his excellency Lord Wodehouse now has, for it is altogether in his power to so forward the increase in Flax cultivation that Ireland may become the nurse of the 100,000 now out of employment in Lancashire until their children, not in arms, but now in 1864 returning from school *wanting a dinner*, will talk of the year that Lord Wodehouse, having placed Lancashire cotton-spinners independent of cotton, as the only article they could spin on (as they call it) the existing machinery of Lancashire.

The cry has always been want of machinery, but if machinery be once started to work, and that farmers know, they can have their material sold off at once, or made marketable on their own account. Flax will be brought in as a standing crop in the course of rotation, and will be called (as it is in Belgium and Holland) the rent paying crop in Ireland.

PART IV.

A short sketch of the early history of the spinning of Flax and weaving of it into linen cloth ; its condition in the reign of Henry VIII., and subsequently in the reign of William III., when Ireland was left in possession of the linen trade, with £20,000 annually voted by parliament for a century, to stimulate and extend it,—and a short account of the progress of the Flax-yarn spinning, and the linen manufactures of Ireland down to 1828, when the first Flax-spinning factories were built by those spirited and enterprising firms, the Messrs. Mullhollands, Messrs. Herdman and Co., Messrs. Hind and Co., Messrs. Boyd and Co., of Belfast, who were then all connected, and stood, as they do now, AT THE HEAD of the Flax-spinning trade in Ireland—An Antiquarian's account of the textile fabrics of the ancients—Flax, Cotton, and New Zealand Flax climates, &c.—Comments (by the Author) on the Leeds Flax-spinners—Sketch of the history of Flax-spinning in Leeds read before the “British Association,” in which the decrease of the growth of Flax in Ireland was unnoticed, to the injury of the manufacturing and agricultural trade of the country—A falling off of from 35,600 tons grown in 1854, to only 14,475 tons in 1856; thus creating a national loss—A short history of Dundee, and the importance of the Flax-trade in that town explained—The profits of the linen and Flax-trade of Ulster held up as an example to Connaught, and the vile agitators who, by setting class against class, have prevented Connaught becoming like Ulster, prosperous and happy, held up to contempt by the real friends of Ireland—A short sketch of the history of Flax from the reign of King William III., by a linen bleacher, with additions by the Author, quoting Buffon on inventions, from which pleasure, like comfort in affliction, may be derived, all of which the Author proves, by quotations from the most learned authorities, and particularly from his own very dear-bought experience, to a brief sketch of which he invites attention, as it will be found profitable to all inventors or patentees ; inasmuch as the astounding facts set forth may warn them to steer clear of those “Rocks ahead!” on which the Author's unfortunate “Patent Bark ” has been more than once nearly shattered to pieces.

SACRED HISTORY tells us that, in the earliest periods of the world, Egypt was distinguished for science, manufactures, and civilization. We are told that Moses was learned in all the wisdom of the Egyptians. There was the school in

which all the early Greek philosophers—Pythagoras, Thales, Solon, and Lycurgus were instructed, and that we are indebted for most of our present knowledge to the Egyptians we cannot dispute; for they instructed the Greeks, who in their turn through the Romans handed down knowledge to us.

The Egyptian kings lived in such opulence and ruled with such power, that the stupendous and magnificent works they executed, are regarded to this day as the wonder of the world. Some idea may be formed of their gigantic undertakings when we turn to the history of their immense canals and artificial lakes, made to receive the overflowings of the Nile. Their catacombs and subterranean vaults are of prodigious extent. The Labyrinth consists of twelve palaces, and 3,000 apartments of marble, all underground, and communicating with each other by innumerable passages. Above all the unequalled and stupendous pyramids, the largest of which sits on a base covering ten acres of ground, and measures obliquely, that is, from the base to the summit, 700 feet; its perpendicular height is over 500 feet. By this people, and in the earliest stages of society, the art of spinning and weaving must have been invented, when those engaged in plantations and the labour of the fields discovered that the variation in climate required a change in clothing, as the skins of animals must have been too heavy for the East. Under these circumstances many would have recourse to experiments in order to form a suitable covering, and as in the Book of Genesis we read for purposes of clothing our first parents had recourse to the twisting of stems, or sewing of fig-leaves, the use of the finer fibre would, in all likelihood, be resorted to, and hence arise the early accounts of the fine linen of Egypt.

From the sacred volume we learn that the cultivation of Flax formed a most important branch in the agricultural

industry of Egypt, at a very early period. It is first mentioned in the description of the plagues by which the Egyptians were coerced into permitting the departure of the Israelites. Both the Flax and the barley crops suffered in the plague of hail; "For the barley was in the ear, and the Flax was balled." This, incidentally, enables us to fix the time or season in which the plagues were inflicted; for Flax in Egypt begins to boll, or flower, about the beginning of February.

In ancient times, the spindle or distaff was the simple instrument used, and I believe it even yet continues to be used by the Hindoos in all its primitive simplicity. This mode of spinning gave way to the spinning wheel, which has also disappeared, to make room for admirable improvements in machinery for spinning Flax-yarns.

Among the Egyptians as among our ancestors at no very distant period, spinning was a domestic occupation in which ladies of rank did not hesitate to engage. The term "spinster" is yet applied to unmarried ladies of every rank, and there are persons yet alive who remember to have seen the spinning-wheel an ordinary piece of furniture in domestic economy. Even so late as twenty years back, the wheel and loom were the common articles of furniture in almost every farmhouse in the north of Ireland, and frequently farmers had boys bound to them as apprentices, to learn the trade of a weaver; and it often happened that those farmers would have from two to six looms at work, and their daughters and sisters spun the yarns to keep them going; now, those looms are all to be seen at work on machine yarns, and hand-spinning has *all but disappeared*.

We find from the book of Joshua, that Flax was very anciently cultivated in Palestine; for Rahab, the harlot of Jehrico, concealed the spies under the stalks of Flax, which she had laid to dry on the house-top.

It is evident from the history of Sampson, that the cultivation of Flax and the arts of spinning and weaving were practised by the Philistines; but the Hebrews were essentially an agricultural people, equally averse to commerce and manufacturing industry. Solomon exerted himself to reform the national habits. He established an emporium at Ezion-geber, to open a trading communication with the eastern seas, whilst his connection with the Tyrians enabled him to participate in the commerce of the Mediterranean. He wished to make manufactured goods one part of his exports, by entering into a league with the reigning Pharaoh to receive *linen-yarns* at a stipulated price, or, as the words may be rendered at a fixed duty. This early example of a commercial treaty for regulating a tariff of intercourse, is curiously illustrated by the recent discoveries in Egyptian antiquities. We find from them that the Pharaohs had very large spinning establishments, such as we should at present call *factories*, so that there was in the valley of the Nile not only enough yarn left for home-consumption, but also for exportation. Had Solomon resembled our continental neighbours in Germany, who now threaten to increase the duty on our Flax yarns, although they cannot, for their own wants, spin by machinery, he would have shown a contracted mind on commercial matters; but he was aware that protection would so enhance the price of yarns to his people, that they could not bring their goods into a foreign market and meet their rivals—just as matters are in our own times. If we increased the duty on Flax, our French neighbours, who have now commenced the spinning of yarns, would, in a short time, take from us our American and Indian trade; therefore, our only hope is to try (as our soil and climate will answer for the cultivation of the plant), to grow what we can spin and manufacture; and as English skill and perseverance are well known to be equal, if not superior to those of any nation in

Europe, we cannot fail to progress in agriculture, any more than in commercial matters, or mechanical inventions.

Although Egypt, as we have seen, appears to have been the country in which the manufacture of linens earliest commenced as a branch of national industry, yet in the age of Joshua, weaving establishments were found in the land of Shinar, and most probably in the chief city of that district, ancient Babylon. "A mantle of Shinar," a "Babylonish garment," was secreted by Achan from the spoils of Jericho: and the delinquent speaks of it as the most valuable part of his plunder. Herodotus says, "The Babylonians wear a *gown of linen* flowing down to the feet, over this an upper woollen garment, and a white tunic covering the whole." Such a dress, particularly the white tunic made of woollen, as the venerable historian seems to intimate, must have been too heavy for so warm a climate, particularly in summer; and hence we may be led to suspect that Herodotus included vegetable and animal wool in his description, especially as we know from other authorities, that the cotton manufacture was established in Babylon at a very early period.

Homer declares that the Theban Queen, Alcandra, presented Helen with a silver work-basket as well as a golden distaff (Odys. iv.); and from the paintings on ancient vases, we see that the *calathi* of ladies of rank were tastefully wrought and neatly ornamented. The Romans called the female slaves employed in spinning *quasillarice*; and these were regarded as the meanest in the household.

5 The material used for spinning was lapped loosely round the distaff; the flax being hackled by processes not very dissimilar to those used by our hacklers of the present day. The ball thus formed on the distaff required to be arranged with some neatness and skill, in order that the fibres should be *sufficiently loose* to be drawn out by the hand of the spinner. Ovid declares that "Arachne's skill in this simple process excited

the wonder of the nymphs who came to see her triumphs in the textile art, not less than the finished labour of the loom."

The distaff was generally about a yard in length, commonly a stick or reed, with an expansion near the top for holding the ball; it was usually held under the left arm, and the fibres were drawn out from the projecting ball, being at the same time spirally twisted by the forefinger and thumb of the right hand. The thread so produced was wound upon the spindle, until the quantity was as great as it would carry.

The spindle was made of some light wood or reed, and was generally from eight to twelve inches in length. At the top of it was a slit or catch to which the thread was fixed, so that the weight of the spindle might carry the thread down to the ground as fast as it was finished; its lower extremity was inserted in a whorl or wheel, made of stone, metal, or some heavy material, which both served to keep it steady and promote its rotation. The spinner, who was usually a female, every now and then gave the spindle a fresh gyration, by a gentle touch, so as to increase the torsion or twist of the thread. Whenever the spindle touched the ground a length was spun; the thread was then taken out of the slit or clasp, and the thread just finished wound upon the spindle; the clasp was again closed, and the spinning of a new thread commenced.

Distaffs and spindles of this kind were commonly used in the Spanish Peninsula at a very recent period, and it is probable that they may still be found in remote districts. They were also used by the peasantry in the west of Ireland, some of whom are known to be of Spanish descent. As the bobbin of each spindle was loaded with thread, it was taken off the whorl and placed in a basket, until there was a sufficient quantity for the weavers to commence their operations.

The threads of the warp or longitudinal fibres, were always stronger than those of the weft or thread, shot through the

warp by the shuttle. In general the Greeks and Romans used an upright loom, not unlike that of the ancient Egyptians, but more closely approaching the lightness and neatness the embroidering frames used by modern ladies in working Berlin wool. In fact, such a frame placed erect, having the warp thread wound on the upper bar and then passing the whole length of the frame to the lower bar, with leash rods somewhere about the centre to keep the alternate threads of the warp separate, would be no inadequate representation of a Roman loom of the upright kind. The weaver, in working at this loom, was obliged to stand and move about in directing the shuttle, especially if the cloth to be woven exceeded a very moderate breadth. The horizontal loom to which weavers sit was, indeed, known in ancient times, but does not appear to be much used before the third or fourth century of the Christian era. In the Egyptian loom the process of weaving proceeded upwards, and the weft, after being shot through, was driven home by an iron bar. In most of the old Grecian and Roman looms, the process of weaving was downwards, and the weft was driven home by an instrument called a *spatha*, which was similar to a wooden sword. In later times the *spatha* was superseded by a comb; and this is the instrument still used by the Hindoos. In our looms the process of driving home the weft is effected by the reed, which is made from cane, and fixed in what are called slays, which work on an axle, and are pulled to by the hand with a *double blow*, if strong goods are required; and a single stroke if light goods are wished for, such a cambric, &c.

Having alluded to the contrivances by which the female Egyptians of the highest rank produced Flax-yarns and fine linens, we must not forget that in Britain the distaff and loom have been also used by females of the highest rank. The daughters of King Edward the Elder were regularly instructed in spinning and weaving; and the immortal Alfred,

in his last will, describes the females of his family as, “ the spindle side.”

It seems probable, judging from the illuminations of ancient manuscripts, that the Saxons made more use of woollen than of linen ; indeed, an old legendary tale preserved in the collection of the brothers Grimm, represents the spinning of Flax as a most extraordinary acquirement, which was not to be thoroughly gained but by *supernatural assistance*. It is singular that the same legend should also be found at one time in Ireland.

On reference to history, I find that wool was the most important article of British produce ; and the Plantagenet monarchs endeavoured to secure for themselves a large share of the profits arising from it, by forbidding it to be bought or sold in any market except the staple towns. In 1261 the barons, enraged at the partiality which Henry III. showed to the French connection of his queen, passed a law prohibiting the export of wool, and ordering that no woollen clothes should be worn except such as were woven at home. Little cloth was made in England, and that only of the coarsest description, until Edward III., in the year 1331, invited over from Flanders, weavers, dyers, and fullers to settle in England, promising them his protection and favour, on condition that they would carry on their trades here, and teach the knowledge of this branch of manufacture to his subjects.

In the reign of Henry VIII., not more than a century after its introduction, the woollen manufacture had thriven so well that it was made to contribute to the revenue, and we were enabled to compete with the nations by whom we had been taught it. It appears, however, that little progress was made until the reign of Queen Elizabeth, when the persecution of the Protestants in France, and more especially in Flanders drove many eminent manufacturers to seek refuge in England, where they were graciously received by Queen Elizabeth.

She passed an act relieving the counties of Somerset, Gloucester, and Wilts from old oppressive statutes, which confined the making of cloth to corporate towns; and trade, thus permitted to choose its own localities, began to flourish rapidly. In 1582, England exported 200,000 pieces of cloth. In this reign also the English merchants, instead of selling their goods to the Hanseatic and Flemish traders, began themselves to export, to the great annoyance of their foreign neighbours.

In the reign of James I., it was calculated that nine-tenths of the commerce of the kingdom consisted in woollen goods. Most of the cloth was exported raw, and was dyed and dressed by the Dutch, who gained, it was pretended, £700,000 annually by this manufacture. English commerce increased under the Commonwealth, but with the Restoration came prohibitions which caused some thousands of manufacturers to emigrate to the Palatinate, and a slow progress of the woollen manufacture was the result. The demand from America and the West India colonies caused a reaction, and the example of the cotton manufacturers induced the woollen traders to direct their attention to machinery. Since that period, the manufacturer has gradually improved, and instead of being ruined, as seemed all but certain in 1782, our exports of woollen cloth averaged between £6,000,000 and £7,000,000 in value.

At this time the linen-trade was of little value in England, and parliament made a present of it to the people of Ireland; and during the reign of William III., there was a feeling on the part of the Parliament, which prevented the encouragement of the Irish in the manufacture of woollens in opposition to England, but to leave them in possession of the linen-trade, which appeared more suited to that country.

Many circumstances contributed to render the linen-trade limited and precarious in Ireland. The people, except in

Ulster, were little acquainted with Flax-culture, nor could they otherwise than slowly, in the course of years, acquire knowledge in a new trade, which we know to be difficult to manage; and as the importation of seed was a heavy expense, and few capitalists would venture in such a business, this circumstance, added to partial failure in the crops, proved discouraging. However, large sums were awarded by the "Irish Parliament" in premiums to encourage its cultivation, and a public board, called the Linen Board, was constituted for the improvement of the linen manufacture, with an annual grant of £20,000, which was voted to it by Parliament for upwards of a century.

This board appointed inspectors to various districts, whose duty it was to give instruction to those who might be desirous of receiving it; Flax-seed was also provided for those whose character for industry, and having land adapted for its cultivation, were a recommendation; and premiums were offered for the best crop, according to the quantity of ground sown. At this time the spinning and weaving of Flax were more the object of the farmer than the profit by its cultivation if he brought it to market, as it occupied the female branches of his family through the whole year in the various processes of scutching and spinning; and weaving it into linen employed the men-servants and sons of the small farmers, in days when work in the fields could not be followed up. A web, or piece of linen containing fifty-two yards, was the work of a man from sixteen to eighteen days; and at that time the weaver could have for his labour often 2s. 4d. to 2s. 8d. per day. The cultivation and manufacture of this useful vegetable, through its different stages, afforded remunerative employment to the small farmers and labourers in the north of Ireland, and may be regarded as being, in a great degree, the means of promoting the industrious habits and general intelligence of the inhabitants of the province of

Ulster: but it is to be regretted that the Linen Board, when the large sum of £20,000 per annum was at its disposal, did not direct their attention to the proper method for cultivating the Flax-plant; as the management of the crop at that time in the most favoured districts, when compared with continental Flax, was seen to be of a very inferior quality and wretchedly defective. Indeed the profits were so considerable to those who grew and manufactured Flax into linen that without considering whether it could not be further increased, the farming and manufacturing population in the north of Ireland, when their productions became subject to competition with the linen produce of Belgium and Brelefeld, found that they could not maintain their position, and as a consequence, from the peace in 1815, the growth of Flax and amount of the linen-trade continued to decrease in IRELAND;* and it is a well-known fact that it has been entirely owing in the first place, to the liberal credit of the English Flax-spinners, Messrs. Hives and Atkinson, Messrs. Benyon and Co., and other spinners in Leeds; with Messrs. Renshaw and Co., and Messrs. J. Kaye and Sons, of Manchester, that an improvement took place in the linen-trade in Ireland. Mr. Thomas Kaye told me he had considerable up-hill work to persuade some Irish weavers to make a trial in the weaving of his first sample of Flax-yarns spun by machinery, solely from the prejudice then against machinery, expecting that it would, as it has done, put an end to hand-spinning.

English spinners of Flax-yarns were obliged to offer the Irish linen manufacturers, then a very limited body, six

* The cotton rags of Manchester got then introduced; the raw material cotton was then 1s. 6d. per lb., and year after year spinning extended until the price became so low for *cotton cloth* that Irish linen was cut out of the English market. As Flax-spinning by hand made linen cloth so high in price compared with cotton, the linen trade suffered great reverses for thirteen years. [More on this subject in another place.]

months credit in order to introduce their yarns and do away with the objections to an article of which they knew a single trial would establish the value, as the weaver who required sixteen or eighteen days to make a fifty-two yard piece of goods from hand-spun yarns, could now turn out a similar if not a better piece from mill-spun yarns, in *half the time*.

The superiority of mill-spun yarns soon became known; and the first house in Ireland that appeared alive to the Flax-spinning trade was that of Messrs. T. and A. Mulholland, of Belfast. A large factory of theirs being consumed by fire in 1828, they made their arrangements to rebuild their premises, and turn their attention to the spinning of Flax. It is needless for me to mention the extraordinary success of those spirited and enterprising men, as their worth and position in society bear witness to the fact; their name as spinners of yarns and manufacturers of linens, is well-known in every town and city on the Continent, and indeed, I may say in every part of the globe, as being the most extensive house in that branch of trade in Ireland. I think it superfluous to do more than say, that their mills and machinery are inferior to none in England, and their system of management reflects credit on them as men of business. This firm has been the means of doing much to regain a trade that was all but lost to Ireland. As to the good results to the farmers in the north of Ireland, the improved appearance of the country, and the many superior mansions, with bleach works and factories, since 1828, must convince the owners of the soil of the great employment the cultivation of Flax must give. Without this valuable plant be encouraged, many water-wheels and steam-engines on their estates would be idle, and many thousands of their tenantry, who are now well able to pay their rents, would be in arrears. Let us fancy those spinners, who have now increased from one in 1828, to above fifty in 1858, to be obliged to import

£1,000,000 sterling of Flax from Russia and Holland, and to pay down this sum in hard cash, and we may fancy the farmers in the north are in a much better condition than those in the south and west of Ireland, where dwell, if we believe the reports of the *Times* commissioner, few landowners or merchants that possess a spirit of enterprise.

I shall conclude my observations on the cultivation of the Flax plant, and the benefit derived by the farmers and working classes from the demand for this staple article; but, before I do so, I think I may ask the British farmers to take another look at our continued increase of importation in this article, notwithstanding Ireland now grows so much for her own use. Look at our imports in 1839, 60,805 tons; in 1842, 55,113 tons; in 1844, 79,791 tons; and in 1856, 84,352 tons. Again, look to the importance and acknowledged benefit of linseed-cake, an article that you now cannot get pure, or free from adulteration, even at an advanced price. If the landowners and farmers in the south and west of Ireland are men without nerve, or spirit of enterprise, and prefer to see contentedly their shamrock hills doomed (like the peasantry) to poverty, it does not follow that you must imitate their example. You can grow Flax equally as well as the Dutch, and better than Russia; therefore I call on you, one and all, to think of the millions you may keep at home by its production.

To give a just idea of legislation in 1750, I would call attention to the following fact. Cotton yarns could not be used as *warp*, and therefore large quantities of linen yarns were imported from Ireland, Scotland, and Germany; and the linen manufacturers of Ireland complained of the yarns being bought up at a high price out of their hands by the agents to be sent to Manchester. It was even proposed in the Irish parliament to lay a prohibitory duty on the export

of linen yarns, which the reports of the Linen Board in Dublin declared to have increased "in a *most alarming manner*." The quantity of linen yarns sent from Ireland to England that year was no less than 2,489,782lbs. The writer of the article adds, "The legislators of that day performed so many odd freaks, that it is a subject of surprise how the Irish Parliament escaped the blunder of prohibiting a demand for the industrial produce of the Irish people."

The importance of Flax-spinning by hand is so well known in Germany that a writer says, when speaking of Bohemian women, "In this part of Germany every female, from the maid-servant to her mistress, has a spinning-wheel; and there is no good house-wife in Bohemia who would not consider herself disgraced, if she did not spin within her establishment all the yarn required to make the linen articles necessary for her household." A similar feeling existed in Ireland while spinning by hand was practised, but the spinning frame and steam-engine has revolutionised the linen-trade, and now power-loom supersedes old hand-loom weaving.

Having made a few remarks on the Flax-spinning in Ireland, Yorkshire, Lancashire, and Scotland, I feel certain that an article which appeared in the London *Daily News*, on the 14th of September last, will be found equally interesting, if not more so, than the dry statistics of the Yorkshire spinners:—

TEXTILE FABRICS OF THE ANCIENTS—LINEN.

A letter on the preparation of Flax so as to resemble cotton, which we (*Daily News*) published recently, has elicited from an antiquarian correspondent the following curious and interesting *resume* of what is known respecting the textile fabrics of the ancients:—

"Your correspondent's reference to the clothing of the

Assyrian gods carries us back to a period when fine linen occupied a proud station among textile fabrics. The Greeks and Romans are but moderns when compared with the Egyptians and Assyrians. The fashions of Pharaoh's court, and the luxury of Sardanapalus, bore little analogy to the stately extravagance of George IV., or of Louis Quatorze. But unless, as Byron suggested, some future age should actually disentomb George IV. and his courtiers, posterity probably will be puzzled as to Brussels lace with the same doubts which perplex writers on ancient linen. When Lucius Lucullus invited his friends to supper in the Hall of Apollo, had he ashirt to his back? When lovely Thais inveigled the philosopher, had she a cambric handkerchief? The learned say that Alexander Severus was the first Emperor of Rome who wore a shirt, at least in our sense of the word, for everybody had an *indusium*. And here we are fairly plunged in the ambiguities of language, and we shall not easily emerge from them. The Roman *subuenta*, the under tunic, was made of *linum*. Was it linen or calico? Curtius uses *linum* of cotton and cotton cloth. In Yorkshire they call Flax 'line;' we moderns have restricted the word 'linen' to the fabric made from Flax. We may remark in general that the more deeply we dive into antiquity, the more completely isolated we find mankind, in their arts and their luxuries, in their religion and their government. Clothing was one of the prime necessities of life, and different races of men have clothed themselves with various materials; the Chinese kept silkworms, and from time immemorial have worn silk; the natives of Hindostan cultivated the cotton tree, and consequently have worn calico; the Syrian, the Iberian and the Gaul made garments of the skins of beasts; nay, the Spaniard, and all that maritime population which dwelt on the shores of the Bay of Biscay, used leather for the sails of their ships. When Lucien, who was a Syrian, describes

Timon in his poverty, he dresses the misanthrope in a dipthera, or leathern garment. Linen would have been unsuited to the poverty of Timon. Thus, even to modern times, while mankind live apart, nations are distinguished by their clothing. The native fabric of Otaheite was the tappa, made from the bark of trees, but Queen Pomare, although, like Penelope, skilled in the indigenous manufacture, preferred for herself an English cotton gown. At Manilla they make muslin from the fibres of the pine-apple; in New Zealand Flax is in use, but the New Zealander does not employ the loom, he plaits the fibres into a square mantle for the chief.

So it is everywhere; the domestic production is cheap, the imported goods costly, and therefore valued. Thus linen, which so slowly made its way among the rugged Romans, was in more than one country the habiliment of females, of the luxurious, nay of the gods and their attendants. In the days of old Homer, the wife of Ulysses superintended the spinning, but it was wool which her maids spun. Doubtless she had linen among her stores, but it was linen imported from Egypt, with which a trade already existed. Whether Penelope had not even some calico may be doubted; for, if cotton was not yet cultivated in Egypt, it was brought from the East in caravans. The wares of China have been found in the Pyramids, and a portion of those of India might have been there also. It is not at all unlikely that the rigging of the Grecian fleet which went to Troy was supplied from Egypt; for, at a period long subsequent to that expedition, we find Egyptian sailcloth made from Flax enumerated among the commodities for sale in the Tyrian marts. (Ezekiel xxvii. 7.) The manufacture of ropes from the same material is a frequently recurring subject of those truly immortal designs which illustrate Egyptian arts.

Here we are then, on the early traces of the East Indian

trade. It was carried on partly by ships from the Malabar coast, and partly by caravans arriving at the Euxine Sea, or passing down through Syria to Eyre, or even to Egypt. In the age of Homer we find a Mediterranean trade in iron flourishing in full vigour. When Telemachus inquires of Mento whither he was bound, the goddess in disguise informs the prince that she was conveying iron to Brundisium, where she would take up a return cargo of copper. Doubtless the other goal of this voyage was on the coast of Pontus. The Chalybes, or Chaldeans, were famous for their iron, whether they got it from the higher Asia or forged it themselves. At all events this tract was one of those by which Asiatic goods found their way into Europe for centuries. In the age of Pliny, iron came from the Seres in company with wearing apparel and skins. But the earliest certain indication of the arrival of cotton in Europe is given by Herodotus. He relates the gift by Amesis, King of Egypt, to the Lacedemonians, of a linen corslet ornamented with gold and cotton, B.C. 556. The embroidery on this corslet, whether executed with the needle or the loom, was a triumph of Egyptian art. Devices of all kinds, more especially of a religious character, were produced by the Egyptian craftsmen, who wrought, according to Julius Pollus, with a warp of linen and a woof of cotton, or with coloured threads, or gold. According to Pliny, whose information as to their operations was most accurate, they were familiar with the use of mordants. "In Egypt," he says, "they produce coloured delineations with marvellous skill, not by applying the colours to the fabric, but drugs which take up the colour. After the drug is applied there is no visible result; but the cloth, once plunged in the seething bath, is raised again partially coloured. And marvellous it is, when there is but one colour in the vessel, how a succession of hues is given to the robe, produced by the quality of the drug which calls them out; nor can they be subsequently effaced by washing."

It was probably against this delineation of patterns ingrained, that the prohibition of the Mosaic law in Leviticus xix., 19, and Deuteronomy xxii., 11, were directed. The Israelites were to be withheld from luxury; that is the point of many of their institutions; their strength consisted in their simplicity. But, moreover, they were to be preserved from the symbolism of Egypt. The embroidered representations of Egyptian gods were as hateful to Moses as the more permanent images in wood or stone.

Here, then, we have arrived at the Flax-growing country. From Egypt the Greeks derived the manufacture of linen. But was all the linen which the Egyptians sold made from Flax? More than one author has gone the length of asserting that the linen garments of the Egyptian priesthood, no less than the mummy wrappers, were all cotton. This notion counts among its partisans the well-known names of Forster, of Tremellius, and of Dr. Solander. Rouelle, in the "Memoirs of the Royal Academy of Sciences at Paris in 1750," says that "all the mummy cloths without resinous matter, which he had examined, were entirely of cotton; that the rags with which the embalmed birds are furnished forth, to give them a more elegant figure, were, equally with the others, cotton." "Was the Egyptian Flax-cotton after all?" he asks, "or was cotton consecrated by religion for the purposes of embalming?" The inquiries carried on at the British Museum led to the same conclusions as those arrived at by the Frenchman. But the more recent microscopical investigations of Bauer and Thompson have overturned all these speculations. The fibres of linen thread are said by these more recent inquirers to present a cylindrical form, transparent and articulated, or jointed like a cane, while cotton offers the appearance of a flat ribbon, with a hem or border at each edge. It has, indeed, been suggested that the ripeness of the cotton might affect the condition of the fibre,

or that the ancient mode of treating the plant might give to the Egyptian Flax an appearance not presented by European specimens. Yet, although Philostratus expressly affirms that calico was exported from India to Egypt for sacred purposes, the balance of opinion has inclined to the belief that all the cere-cloths at least were of Flax.

As our inquiry leads us from the shores of Greece to the banks of the Nile, the language in which the subject of discussion is expressed is radically changed. In Egypt we are in contact with a Shemitic dialect. The Teutonic word "linen" disappears. The Greek, in purchasing a foreign commodity, had learnt the word *bussos*, and he had given it to the Romans as "byssus." But in the Shemitic dialects we meet with half-a-dozen words which may all mean linen or cotton, and whose signification has been abundantly disputed. No doubt these words had originally different significations; but eventually they were all confounded together. The account of the corslet presented by Amesis, if there were no other evidence, would prove that the Egyptians had cotton under the Pharaohs. The very phrase for cotton, which we find in the mouths of the Greeks and Romans—viz., "linen of the tree" or "woollen of the trees," we find in the book of Joshua, ii., 6. But "byssus" seems to have been selected as the name of the material specially destined for sacred rites. It certainly is the term which Herodotus employs in speaking of the mummy wrappers. But had the father of history another word to use, intelligible at least to Greek ears? On the other hand, if *bussos* meant *linon*, why did he choose the foreign word? Byssus evidently had a special adaptation to his subject. That the Jewish byssus had a more yellow tint than the plant cultivated in Elis may be inferred from a passage in Pausanias; but the etymology of the word leads us to surmise that the name implied peculiar brilliancy and whiteness. Theocritus, who enjoyed the favours of Ptolemy Philadelphus, and may

be supposed to know the appropriate name for the material used in Egyptian rites, represents one of his female characters as attending a procession to the grave of Artemis in a tunic of byssus.

But if we are in doubt as to the native names for the various sorts of Egyptian linens, the mummy wrappers leave no uncertainty as to the excellence of the workmanship. The interior swaths are indeed coarse; but some of the exterior bands vie with the most artistic productions of the modern loom.

The peculiarity of the Egyptian structure is a great disparity between the warp and the woof; the warp generally containing three or even four times as many threads as the woof. This disparity probably originated in the difficulty of inserting the woof when the shuttle was thrown by hand. To give an idea of the fineness of the Egyptian muslins, we may remark that the yarns average nearly 100 hanks to the pound, 140 threads in the inch to the warp, and about 64 to the woof. Some of the cloths are fringed at the end, and remind us of the garments prescribed to the Jews in the Mosaic law. (Numbers, xv. 38.) Several specimens are bordered with blue stripes of various patterns. Had the patterns, instead of being confined to the edge, been extended across the structure, they would have formed a modern gingham. The Nubians at the present day rejoice in similar shawls. The dresses in the Egyptian paintings, descriptive of women of rank or of deities, resemble our chintzes.

Such was the ancient linen, the staple commodity of Egypt. She exported it in Phœnician bottoms to the Mediterranean ports. It was not all made of Flax. Both Pliny and the Rosetta stone testify that the calico was in especial favour with the priesthood; but their partiality for the more modern material was not strong enough to break through ancient customs. The experiment on the mummy cloths corroborate

all which we know of Egyptian conservatism. For religious purposes the Flaxan texture was rigidly demanded.

So much was written in the *Morning Chronicle* upon Flax-cotton (Claussen's Patent) that I am not surprised to find a letter on the subject should again appear in it; but Mr. Brotherton forgets that Flax is so much more valuable than cotton, and being double the cost, that it would be not unlike trying to turn gold into silver, to wash Flax by reducing it in length to cotton.* Again, he appears not to be aware that Mr. Bright, M.P., tried to spin for Claussen, and gave it up as a bad job, because of the short and long lengths in the staple. Claussen had all sorts of cutting machines, and all proved a failure.† However, I shall give place to Mr. B.'s letter on the subject.

COTTON AND FLAX.

To the Editor of the "Morning Chronicle."

"SIR,—After reading your remarks on the Cotton Supply Association in a leading article in the *Morning Chronicle*, I am induced to solicit a small space in your valuable journal for a few further observations on that important fibre, Flax. It is a most extraordinary circumstance, and one that will be scarcely credited by succeeding generations, that the great and wealthy cotton manufacturing interest of the present age should spend so much time, labour, and money in the endeavour to produce the fibre of cotton, and at the same time be satisfied to remain in perfect ignorance of what really is the

* Such was my opinion in 1858 when writing the above, as the cotton was then so low as 4d. to 6d. per lb., and Flax of the lowest sort could not be had below 5d. per lb., then to that 3d. per lb. must be added to make it fine, clean, and soft, for cotton-spinners use, but now, as cotton is up to 1s. 6d. and 2s. per lb., Flax must and will come in to a great extent to take the place of cotton for household purposes.

† This difficulty I have got over by my patented cottonizing machine, which makes the fibres the exact length for cotton spinning machinery now in use, in 1864.

true fibre that God himself (whose works are perfect) created wherewith man should be clothed, and for which it is well known that cotton is but an imperfect substitute.

“ You did me the favour to publish a few remarks on the 18th August last on the formation of the fibre of Flax and its treatment by the ancients. In my further experiments to obtain a perfect separation of the true fibres of Flax it resulted to be of importance first to extract from Flax-seed its gum, which is given off to water, and then compress the oil. This oil, when applied to the outer covering of the Flax plant, possesses a powerful affinity for, and unites with, the gum and oil that unites the true fibres, and that forms likewise a portion of the actual fibre of Flax at present employed in manufacture. After remaining in this oiled state a few hours, the whole extraneous substance is so softened that it washes away with water, leaving the most beautiful fibre about an inch long, white and brilliant as burnished silver, vastly superior to cotton. It can be produced by our farmers in the United Kingdom in sufficient quantity; giving at the same time abundant employment to our male and female rural population, increasing likewise the means of producing animal food for the people.

“ This is no new theory or great discovery, but one of great antiquity. The Assyrians had this fibre, as also other nations at subsequent periods. In 1747 France was occupied with its production, and in 1775 we find a Mr. T. B. Baily, of Hope, near Manchester, and Lady Moira, in Ireland, occupied in producing this same fibre under the name of Flax-cotton. It is stated that the fine fibres of Flax, when made to separate from each other, were carded with cotton cards and spun with cotton machinery, and were sold at 3d. per pound. Lady Moira states in a letter to the Society of Arts, in the year above-named, ‘ I have no reason to be vain of the samples I have sent you, they merely show that the material of Flax-

cotton in able hands will bear manufacturing, though it is my ill fortune to have it discredited by the artisans who work for me. I had in Dublin, with great difficulty, a gown woven for myself, and three waistcoats; but had not the person who employed a weaver for me particularly wished to oblige me, I could not have got it manufactured. The absurd alarm that it might injure the trade of foreign cotton had gained ground, and the spinners, for what reason I cannot comprehend, declared themselves such bitter enemies to my scheme, that they would not spin for me. Such is my fate, that what between party in the metropolis, and indolence in this place (Ballynahinch), I am not capable of doing my scheme justice. I did wish to introduce among the people this invention, which I saw might be greatly improved, and turn the refuse of Flax into comfortable clothing, and by a process so easy that every industrious wife and child might prepare it.' The specimens of those fabrics, as well as of Flax-cotton prepared by her, which are preserved in the Museum of the Society of Arts, are remarkable for their beauty.

"It is greatly to be regretted that the same prejudice prevails to a great extent to the present day, but if the Cotton Supply Association would turn their attention to this fibre, they would find that the English, Irish, and Scotch farmers can produce for them this Flax ready for carding, superior in quality, and at less cost and in greater abundance, than they can obtain cotton from more distant parts of the world. Were this taken up with spirit, two years would be sufficient to strike a final death-blow to American slavery.

"W. BROTHERTON.

"22, Maidstone Street, N.E."

Many attempts have been made from time to time to discover the proper method of preparing New Zealand Flax (*Phormium Tenax*), and the unvarying failures to accomplish

the object, makes the article of more interest than if it were easily prepared. I had, from the Society of Arts in London, one half hundred-weight, which I managed to break, scutch, and prepare by my patent machines and patent liquid process. I produced the fibre fit for spinning, all the gum or resin having been thoroughly removed. A description of the country and climate where the fibre is produced at about £12 per ton, will doubtless be interesting to the reader. On the 18th of February, 1859, I prepared some New Zealand Flax by machinery alone, and made it worth £60 per ton, from green straw; £15 per ton first cost, and even that price cannot be got for it in London, as imported; but as the New Zealand government has very wisely adopted the only method to have the Flax introduced into the English market, by offering a reward of £4,000 to such inventors as may discover and produce machinery and a process of preparing it for market, I have no doubt, from my own experiments, that a great trade must in a short time be created in the article of *Phormium Tenax*, and consequently I think the following deserves insertion.

NEW ZEALAND.

The following extracts are taken from Mr. C. Hursthouse's *New Zealand*, published by Stanford, Charing Cross:—

THE CLIMATE.

“The climate of New Zealand has suffered from indiscriminate laudation. Feminine superlatives, such as ‘nicest,’ ‘finest,’ ‘loveliest,’ ‘sweetest,’ have been so lavished on it as to have obscured its true character, and its real unquestionable merits. In the sense in which we use such terms as fine, serene climate, there are many climates equal to that of New Zealand. Nay, if we limit the comparison to any one special month or season, we may perhaps find climates which,

partially, are even finer. I have never experienced any month in New Zealand equal in settled splendour and sunny serenity to the Indian summer of America. I should fancy there is no entire season in New Zealand equal to the luxurious softness and young brilliancy of an Italian spring; and perhaps no whole month equal to a fine old English June. There is too much cloudy windy weather in New Zealand to entitle us to say that it has a sunny, serene climate, and the southern coasts are subject to storms of cold rain and furious wind ('Southerly Bursters'), which are probably equal in their way to anything in the world.

"Nevertheless, the climate of New Zealand is substantially a good climate, and has not been so much over-praised as badly praised. More frost, less wind and rain, would make it perfection; but as it is, all this may be truly said of it—that it is a climate favourable alike to the preservation of robust health and to the improvement of weak health; a climate most congenial to all pastoral and agricultural pursuits; one in which every English domestic animal thrives and fattens, and in which every English grain, grass, fruit, and flower attains full development and perfection.

"No art can make a bad climate good, but art can make any climate better. The cultivation of a new country materially improves its climate. Damp and dripping forests, exhaling pestilential vapours from rank and rotten vegetation, fall before the axe, and light and air get in, and sunshine, ripening goodly plants. Fen and marsh, and swamp, the bittern's domains, fertile only in miasm, are drained, and the plough converts them into wholesome plains of fruit and grass, and grain. When Cæsar's legions chased the painted savages along the shores of Kent, many a deadly Pontine marsh held the place of what is now a champaign country of orchards, corn, and cattle; and the primeval climate of Albion probably mowed down more of the invaders than did the scythed

chariots of her woad-stained warriors. A few years since the ague was the scourge of my native swamps in Lincolnshire, and fen infants, like myself, were only preserved by copious cups of bark and wine. But now, reed and rush, and snake, and buzzard rat, and eel have vanished before the plough; the 'reek o' the rotten fen' is gone, and the ague a tradition of the past. It is difficult to credit that the climate of Canada could ever have been more inclement than it now is, yet old greybeards of the bush tell us that sixty years ago Canadian winters were winters worthy of the Arctic zone. Settlement and cultivation will produce like effects in New Zealand, so that we may plume ourselves on the thought, that if the climate be good now, it will be better ere long, and perfect for our posterity.

SCENERY OF NEW ZEALAND.

"The natural scenery of New Zealand is both bold and beautiful, though to an English eye, accustomed to trim fields, clipped edges, and to the smooth-rolled, finished look of every acre in England, it would frequently appear more bold than beautiful. Indeed, many a district would strike the Norfolk farmer, or the Cockney sketcher, whose ideal of beauty was the Holkham turnip field or the highlands of Hampstead, with far more of amazement than delight. The scenery we admire in England is often the costly coat of art, rather than the primeval dress of nature. As regards polish of cultivation, the garden's glories, the plough's court robes, New Zealand is much in the state that Britain was when Cæsar landed; and if Cæsar's Britain could now be shown us, many a bright campaign country which we call beautiful would vanish, to reveal the gloomy forest and the repulsive rugged waste.

Bearing in mind the extent of the country; that the land is equally verdant and leafy through summer and winter; that

the bright breezy light-and-shadow casting character of the climate is peculiarly favourable both to the display and to the enjoyment of scenery; I think we may say that in the combination of those great natural features which constitute the foundation of fine scenery, New Zealand is unsurpassed by any country in the world. She displays noble forests, snow-capped mountains shooting up 10,000 feet from a sea of green and wooded, up to the line of snow, tracts of rolling champaign country dells, valleys, rivers, and rivulets innumerable, and 3,000 miles of bay and ocean coast.

“New Zealand, too, with all these elements of fine scenery, this stock of ‘raw beauty,’ is a fertile cultivable country, where plough, sickle, and mill would singularly enrich and brighten the landscape. The plough could not improve the natural beauty of a country like the Scottish highlands, because the Scotch highlands are not peculiarly ploughable; and the plough, if every ploughman were a Mechi, could not create the ‘beautiful’ in a country like the Lincolnshire fens, or the plains of Belgium. But in a wild, fertile, woody country, more resembling a combination of Derbyshire and Devonshire, it is evident that cultivation would singularly improve the beauty of the scenery.

“Picturesque sites and sheltered nooks for hamlet, tower, and town, homestead, cottage, and castle, are multitudinous in New Zealand, and when cultivation has given colour to the landscape, and contrast to the universal background of green; when the hills are more dotted with sheep, and the valleys more golden with corn; when the pheasant whirrs from the brake, and the fox bursts from the cover, New Zealand will offer a thousand views which even a Turner might cross the seas to paint.

THE MAORI, OR NATIVE ISLANDER.

“By superficial observers who have had only slight means of judging, the New Zealanders have been both over-rated and

under-rated. The enthusiastic 'missionary smitten' visitor has entered a picked village, and boldly proclaimed them a noble people, equal to the highest career: the 'anti-aborigines' visitor has entered another village, and denounced them as greedy savages, fit only for extirpation. The good qualities of the Maori have however, been far more over-rated than under-rated. Captivated by his bravery, we have forgotten his ferocity; charmed with his missionary conversion, we have excused his mercenary cunning; and dazzled with his aptitude for civilization, have not cared to see his lingering inherent fondness for barbarism. Towards him it has not been 'nothing extenuate or ought set down in malice,' but 'be to his virtues very kind, and to his failings very blind.'

"In their present state of semi-civilization (but assuming that further civilization will educe more good than bad qualities) I should call the Maori race artful, over-reaching, suspicious, and designing; singularly mercenary and ungrateful; and still somewhat passionate, capricious, and revengeful; but not dishonest, generally merry and good-humoured, high-spirited, and (to each other) neither ungenerous nor unkind; sensitive of ridicule, but fond of a joke, inquisitive, and so femininely communicative as to be incapable of keeping even a life secret.

In natural intellect they are undoubtedly [equal to any European race. Indeed, I think (with a good teacher) a Maori child would learn to read and write more quickly than an English child; and if an average Maori boy and an average English boy of fifteen were apprenticed to a carpenter, both having equally good masters, and both equally fond of their pursuit, I think the young New Zealander would turn out his sash or his panel-door sooner than the young Anglo-Saxon. The missionary [schools in the settlements, and the branch native-conducted schools in the interior, have been very successful in teaching the rudiments of knowledge. The

Bible has long been a familiar book among the natives; 'Robinson Crusoe' and one or two other little works have been translated; a Maori periodical and a Maori newspaper circulate among them; and geography, simple and even fractional arithmetic, are becoming rather popular studies."

ON THE FLAX MANUFACTURE IN YORKSHIRE.

BRITISH ASSOCIATION, LEEDS, SEPTEMBER, 1858.

A sketch of the history of Flax-spinning in England, especially as developed in the town of Leeds, by a Flax spinner, with additions by the author from his knowledge of the preparation of Flax and the yarn trade, and the manufacture of all kinds of linen goods in Ireland, from 1820 up to the year 1842, when he removed to London to set up as Flax agent, and carry out his views of improved machinery for the preparation of Flax, and some remarks on the decrease in Flax-culture in Ireland, and the Flax-spinning trade in Dundee.

The Leeds Flax-spinner says, "There is, perhaps, no branch of our principal manufactures, except that of cotton, in which the introduction of machinery and the factory system has produced more remarkable changes than in that of Flax-spinning, and as the town of Leeds is the place where this new branch of industry first took root in England, and was successfully carried out upon a considerable scale, and the place which has hitherto taken the lead in the successive improvements introduced into the trade, it may be interesting to the section to have a short sketch of the origin and progress of Flax-spinning brought before them while they are here. The first essay in Flax-spinning in Leeds was made at a small mill driven by water, called Scotland Mill, about four miles from Leeds, by my late father, John

Marshall, in partnership with Samuel Fenton, of Leeds, and Ralph Durham, of Knaresborough. This was in 1788 or 1789. The wonderful success and large profits attending the introduction of Arkwright's invention into cotton-spinning had about this time attracted general attention to mechanical improvements applied to manufacturing purposes. The spinning of Flax by machinery was a thing much wished for by the linen manufacturers. It attracted the attention, amongst others, of Mr. Marshall, who was so strongly impressed with the advantageous field for invention and enterprise offered by Flax-spinning, that he devoted himself entirely to the new enterprise. It appears that some attempts at Flax-spinning had already been made on a small scale at Darlington and some other places, as the first spinning machines used at Scotland Mill were on a patent plan of Kendrew and Co., of Darlington. This did not answer; experiments were made and a patent taken out for a plan of Matthew Murray's, the foreman of mechanics with Mr. Marshall. In 1791 a mill was built in Holbeck, Leeds, and at first driven by one of Savery's steam-engines in combination with a water-wheel, but in 1792 one of Bolton and Watt's steam-engines of 28-horse-power was put down. In 1793 there were 900 spinning spindles at work. We may take this small item as our first statistical datum of Flax-spinning in Leeds. I may here describe an important difference between the state in which the raw material, Flax, is presented to the spinner, and that in which cotton wool or silk is found previous to being manufactured. The fibres of cotton wool and silk are supplied by nature already in their purest state of sub-division, they require merely to be straightened and formed into a continuous thread. In raw Flax, on the other hand, the ultimate fibres, which are very fine, are united by a gummy matter into broad strips or ribands, and a very operose process called heckling is required to sub-divide

the material into finer fibres before the spinning process can begin. In the earlier stages of Flax-spinning this preparatory process was performed entirely by adult men called hecklers. As soon as the Flax-spinning by machinery began to increase considerably, the demand for the labour of the hecklers enabled them to obtain high wages; as much as two guineas a week, if they worked, and as they were combined in trades' unions, and enforced the old limitations on the number of apprentices, they became possessed of a species of monopoly extremely troublesome and prejudicial to the progress of the trade. In fact, no large extension or well organised system was practicable so long as this barrier remained on the threshold. A patent for a heckling machine by which this process could be performed without the assistance of adult labour was taken out in the name of Matthew Murray, about 1805. Its introduction was resisted at first by the men with much violence and intimidation, but being firmly persevered in, it became an established portion of the system. It was introduced gradually into general use in the trade, and had the effect of neutralizing the monopoly of the hand-hecklers without any sudden displacement of labour. The next step was the establishment of a good machine-making shop, for Flax machinery by Mr. Murray, which became the parent or precursor of many others, until Leeds became the seat of a very important branch of business in the machine-making line, chiefly for Flax-spinning. The system of Flax-spinning had now become firmly established and well organised, and made steady progress, but as yet was only applicable to the production of the coarser description of yarns up to No. 16, or 16 lea yarn, which was manufactured at Barnsley into the coarser description of linens. The material employed was almost entirely Baltic Flax. An improvement was next introduced into the processes called preparing, preceding the actual twisting of the fibres into a

thread in the spinning-machine ; this improvement consisted in drawing the fibres through fine heckles or gills instead of rollers, and this gave the means of producing much evenner and finer thread, that is, up to 40 or 50 leas, and for these yarns the finer Flaxes of Flanders and Holland began to be used. This was about the year 1820, when this finer description of yarn came into very extensive use in the manufacture of the finer and better sorts of drills, an important branch of the Barnsley linen-trade. We now come to the introduction of a very important improvement in the spinning process as applied to Flax. I have adverted to the gummy matter which in raw Flax unites or glues together the fine ultimate fibres into much coarser ones, and which it is the object of the heckling process to sub-divide by mechanical means. The division so effected can only be imperfect, and it was found that the fibres could be more completely separated by saturating the material with water, which dissolves or softens the gummy matter in the spinning-machine itself, when in the actual process of being drawn out and spun. There is a somewhat singular history attached to the origin and progress of this invention of wet spinning. During the great war between England and the first Napoleon, it became a leading object of his policy to exclude English manufactures, and to encourage those of France. England had taken a decided lead in the cotton manufacture, but at that time, about the beginning of the present century, little had been done in England in applying machines to the linen-trade. The linen-trade of France has always been a very important branch of industry, linen being more extensively used by the bulk of the population in France than in England. Napoleon therefore wished, by encouraging the application of machinery to the linen-trade in France, to make it a rival to the cotton-trade of England. He offered a reward of a million of francs for the successful

application of machinery to the spinning of Flax. This inducement brought forward Girard, who produced designs for a series of machines for preparing and spinning Flax, of great ingenuity and originality, including this plan of wet spinning. But what was the result, so far as the linen-trade of France was concerned? Girard could find no one in France with the enterprise and capital requisite to perfect and apply his invention. He had to come to England—he had to come to the town of Leeds. A patent was taken out for his inventions in England, especially for the wet spinning, under the name of Hall, in 1816, and was taken up by Robert Busk, of Leeds. Mr. Busk put up a considerable quantity of machinery on this plan, and produced by it yarn much finer than that usually spun. But he kept the new plan to himself, it was not tried by others; but the improvements in the preparatory processes were not then sufficiently advanced to make fine spinning advantageous; the plan did not answer commercially, and was given up and forgotten. In 1826, however, it was revived in the shape of a new patent with some modifications, by Mr. Kay, of Manchester. The validity of his claim to a new patent was disputed by the body of Flax-spinners, and set aside.”

On the validity of the claim of Mr. Kay for his patent for spinning Flax through hot water, I, J. H. Dickson, will not express an opinion, but this I do assert, as I was agent for him for several years from 1833, that he was the first man to produce yarn spun through hot water; and I can well recollect Mr. James Kay telling me that he had to sit on the looms in Ireland with the weavers, and not only flatter them but pay them *double wages* to get them to weave the *mill-spun yarns*, the yarns being then all spun *by hand* spinning-wheels that were used for linen-cloth; and I must here confess we had then better linen, although the yarn was not so level as the mill-spun yarns, than we have had since the hand-spinning

ceased to be followed, and also better Flax, for the farmers' wives, daughters, and servants having to spin their own Flax, took treble pains in all the various modes of culture, watering, &c., and were no doubt much better skilled in handling it in the time that the same class are now; for the fact of their having to spin it and provide weekly house expenses by the sale of the yarn, and in a great measure all the clothes they wore, made them trebly careful in the preparation of the raw material; and the farmers' sons having to weave it made them equally anxious to possess well prepared Flax. I recollect that my own father obtained in Dublin £1 2s. 9d. per stone of 16lbs. for Flax that had been prepared in a superior manner.

The Leeds Flax-spinner, continuing his sketch of the Flax-spinning trade in Yorkshire, says that "the first spinning-machine on this plan was put up at the works of Messrs. Hives and Atkinson, of Leeds, and by them and other spinners the whole plan of wet spinning, with the requisite improvements in the preparing processes, was soon perfected and carried out. A very wide horizon for the extension of Flax-spinning was now opened. Yarn could now be spun much finer than before, from 50 up to 200 leas, and also cheaper, so as effectually to exclude hand-spun yarns from the whole range of linen manufacture, except the finest cambrics and lace thread. For a time, large quantities of these wet-spun yarns were sent from Leeds and Lancashire to the north of Ireland and to France. But the new mode of spinning soon spread into Scotland, Ireland, and finally into France, where it is now carried on—under the stimulus of a protective tariff, however—to a large extent. Thus the object of the first Napoleon was at length accomplished, but not in the way that he intended; the result was a benefit to France, but only as the consequence of a still greater benefit to England. The present Emperor has, not long since, rewarded the descendants of Girard for his invention, the fruits of which were so long

postponed. The later improvements which have followed the wet spinning have consisted in the application of the combing machinery, which has done so much for the worsted manufacture, to Flax tow, enabling a material, capable of being spun to the finest yarn, to be obtained from what is otherwise only of small value; and various processes have to be tried for cleansing and softening the raw Flax previous to its being spun—(Dickson's patent for *oil* and *ammonia* proved successful for cleansing and softening). The manufacture of sewing thread from Flax commenced not long after the introduction of Flax-spinning by machinery, and has since increased, and become a branch of the linen-trade of considerable importance, a large proportion of the thread manufacture being carried on at Leeds.* The application of the *power-loom* to the weaving of *linens* has, of late years, been considerably on the increase, but to a much less extent than in the cotton and worsted manufactures; as the greatest part of the linens made in the United Kingdom are still woven by hand labour. I have thought it necessary to give this account of the nature of the successive improvements introduced into the Flax-spinning, in order to make the statistical figures I shall now quote more intelligible. The sources from whence the statistics of the linen and Flax-spinning trade may be derived are somewhat scanty, but enough may be stated to indicate its progress.

IMPORTS OF FLAX INTO THE UNITED KINGDOM.

Average of 5 years.		Tons.
1820 to 1824		27,875
1825 „ 1829		44,491
1830 „ 1834		48,044
1835 „ 1839		61,218
1840 „ 1844		67,718
1845 „ 1849		68,879
1850 „ 1854		76,254
Year 1855		64,672
„ 1856		84,352

* I was the first person able, by my experiments in Leeds in 1838, on a power-loom made by a Mr. Busk, to overcome the great difficulty in making a web of linen with a perfect selvage, and to introduce the loom into Belfast.

Previous to 1820, the import of Flax had increased but slowly, but from that time we see that the increase has been rapid, having been more than trebled between that date and 1856—or from 27,875 to 84,352. We must add to this the home growth, which is for Ireland about 22,000 tons yearly, on the average of the last ten years; for England and Scotland a small quantity, probably not exceeding 600 or 700 tons. On the whole, the annual consumption of Flax in the United Kingdom will be about 100,000 tons, which, at an average price of £50, will make the yearly value of the raw material of the linen manufacture about £5,000,000. From a Parliamentary return we obtain the following particulars respecting the Flax-spinning of the United Kingdom:—

FLAX-SPINNING—1850.

1850.	Factories.	Spindles.	Power looms.	Horse power.	Hands.
England and Wales	135	365,568	1,083	4,487	19,001
Scotland	189	303,125	2,529	6,425	28,312
Ireland	69	326,008	58	3,380	21,121
	393	994,701	3,670	14,392	68,434
1856.					
England and Wales	139	441,759	1,987	4,644	19,787
Scotland	168	278,304	5,011	6,346	31,722
Ireland	110	567,980	1,871	7,332	28,753
	417	1,288,043	8,869	18,322	80,262
1856. Yorkshire.					
Spinning only	37	149,201			
Spinning and weaving . . .	9	65,346	411		
	46	214,557	411		
1858.					
Leeds	11	160,300	510	..	8,772

Here we see that the increase has been much the most rapid in Ireland, and that in Scotland there was during this period a small diminution. There are several circumstances to account for the rapid increase in Flax-spinning in Ireland. The north of Ireland is an old established seat of the linen manufacture, chiefly of the lighter fabrics suited for the export markets, and especially for that of the United States of America, which, since 1846, have so largely increased. Again,

when the spinning by machinery was introduced into the north of Ireland, all the other branches of the manufacture were already established there, the weaving, the bleaching, the commercial establishments, and besides this the Flax (the raw material) was grown at their own doors.* In England the linens manufactured have been more of the heavier and higher priced description, and suited more for the home market than for export. In Scotland, the manufacture has consisted chiefly of the coarser and cheaper description of linens and of yarns, and the export of the latter has been materially affected by the high protective tariffs of the Continent, especially of France. Much attention has of late been attracted to the object of encouraging and increasing the home growth of Flax in England and Scotland; but the introduction of this species of agricultural produce into districts where it is entirely new, is attended with many difficulties, and but little has yet been effected in that direction. Many attempts have also been made to introduce new fibrous materials from our colonies and foreign countries for use in the linen manufacture; and the new material Jute, imported from India and used chiefly in Scotland, has been of valuable service to the manufacture of that country. I may now draw attention to the following table, showing the exports of the linen manufactures of the United Kingdom:—

EXPORT—LINENS.

Years.	Linen Manufactures Entered by the yard.		Thread, Tapes, and Small Wares.		Linen Yarn.	
	Yards.	Value. £	£	lbs.	Value. £	
1831 to 1835	65,571,770 . . .	2,292,906 . . .	74,883 . . .	1,297,603 . .	108,415	
1836 to 1840	78,468,192 . . .	2,901,299 . . .	97,723 . . .	12,383,825 . .	637,121	
1841 to 1845	84,682,490 . . .	2,733,160 . . .	178,580 . . .	25,465,785 . .	1,001,618	
1846 to 1850	99,346,562 . . .	2,957,401 . . .	249,301 . . .	15,876,004 . .	726,425	
1850 to 1855	125,226,539 . . .	3,924,807 . . .	342,327 . . .	20,307,571 . .	1,024,488	

* This is the doctrine of Swift, first produce, and then work up to the greatest degree of perfection, for exportation, your own home-grown material, as a first step to a country's thriving.

We see from this table that the export of linens has nearly doubled in quantity and value between the years 1831 and 1855. The export of thread has increased more than four-fold. The export of yarns increased with very great rapidity up to the year 1845, since which time it has been nearly stationary, being checked by the high tariffs on the Continent before spoken of. The next table gives a comparative view, so far as can be made out from returns and the most reliable estimates, of the total extent of Flax-spinning in foreign countries, as well as in the United Kingdom, in the year 1852 :—

	Spindles.		Spindles.
England	391,568	Russia	50,000
Scotland	295,125	Austria	30,000
Ireland	456,000	United States . .	14,550
		Switzerland . . .	8,000
United Kingdom	1,142,639	Holland	6,000
France	350,000	Spain	6,040
Belgium	100,000		
Germany	80,000		1,731,283

I must now conclude my sketch of the remarkable rise and growth of Flax-spinning in England, and of which the town of Leeds has been to so large an extent the birth-place and centre of improvement, and which has since spread so widely, not only over the three divisions of the United Kingdom, but into all quarters of the world. If the extension of Flax-spinning has of late been more rapid in other quarters than in the town of Leeds, we must accept that as a warning at once, and a friendly challenge to the renewal of the exertions by which Leeds was distinguished in former years.

The Leeds Flax-spinner, having finished his “long discourse” on the importing of Flax, and the exporting of linens and yarns, overlooked the necessity of noticing the most important feature of the subject, viz., the deficiency of supply.

Indeed, his friendly challenge "to a renewal of exertions by which Leeds was distinguished in former years," reminds me of one of the contracted views held by the late Daniel O'Connell, when he wanted "Ireland for the Irish." Why did he not take a national view of his subject, and let the British Association know the cause of the national loss, by the increased imports of 20,680 tons of foreign Flax in 1856, over the imports of 1855? Why did he not extend his subject to Ireland, a country from which he derived the greatest portion of his wealth? Had he done so, he would have discovered the national loss, and would have been able to explain it by the increased imports of the raw material. Who, being possessed of friendly feeling towards those engaged in the spinning of Flax in Great Britain and Ireland, could view the enormous increase of imports of foreign Flax from 1820 to 1856, without experiencing deep regret at the falling off in the production of Flax in Ireland, between the year 1851 and 1856. However, as the Leeds Flax-spinner has not told us in his "friendly challenge" what he means by the statement that the Leeds spinners would gain by a "renewal of exertions," I will venture to place before them (the Leeds spinners) facts, by *figures*, which will point out what should incline them all to admit the necessity for promoting the cultivation of Flax in England, and above all by the natives of India, where labour is not more than 3d. per head, while slave labour in growing cotton is 7d. per head.

From a late number of the *Belfast Mercantile Journal*, I copy the following observations, penned by my once most particular and respected friend, the late Mr. John Seed, who was proprietor and editor of that journal, and who for several years conducted it with great judgment and ability. His loss to the mercantile interest in Belfast has been acknowledged by the press of Ulster with feelings of sorrow, sympathy, and goodwill which reflect credit on the proprietors, and must help

to console the family and other relations, who have to deplore the loss of so worthy a member of society. Mr. Seed, in his article on the Flax question, said :—

“ The serious decline in the cultivation of the Flax plant in Ireland, adds increased interest to this question, the fibre of that plant being the raw material of the staple trade of Ulster. The following figures show the continuous decline :—

No. of acres sown in Ireland.	Produce per acre.
1851—140,536 - - - -	33,861
1852—137,008 - - - -	35,462
1853—174,579 - - - -	43,863
1854—151,404 - - - -	35,606
1855— 97,075 - - - -	23,428
1856—106,311 - - - -	18,791
1857— 97,821 - - - -	14,475

Here we find that since 1854, the decline in weight reaches no less than 67 per cent., during a period, too, that the linen-trade has been rapidly extending, as indicated by the following statistics of value, extracted from the Board of Trade returns :—

Exported from the United Kingdom.		
Linen manufactures.		Linen yarns.
1851—£4,107,395 - -		£ 951,426
1852— 4,231,786 - -		1,140,565
1853— 4,758,432 - -		1,154,977
1854— 4,108,458 - -		944,502
1855— 4,118,924 - -		916,429
1856— 4,888,780 - -		1,365,980
1857— 4,511,454 - -		1,647,879

The consequence of this unnatural state of things has been, and must continue to be, an increased price for the raw material, the result of which, as a matter of course, will be the transference to a great extent of the consumption from linen

to cotton or other fabrics, to the serious injury of Ireland's staple manufacture.

It behoves our merchants, therefore, to be wise in time, and at once set their houses in order, ere it be too late.

From the above returns, it appears the imports of foreign Flax and the growth of Irish Flax stand thus:—

				Tons.
Foreign Flax Imported in 1824	.	.	.	27,875
Do. 1834	.	.	.	48,044
Do. 1844	.	.	.	67,718
Do. 1856	.	.	.	84,352
Irish Flax grown in 1851	.	.	.	33,861
Do. 1854	.	.	.	35,606
Do. 1857	.	.	.	14,475

If the object of the British Association's annual meetings be that of promoting trade and grappling with subjects that are a drawback on industry, surely the above facts should have been brought before them in Leeds.

However, as the Leeds Flax-spinners thought proper to leave their cause in the hands of one man in the trade, and that man's wealth enables him, when markets are low, to lay in two years' stock of Flax, they cannot be surprised at his not going into the cause of the enormous rise, this year, in the price of Flax, compared with the price for years back, as it was not his interest to expose the trade further to the "British Association," any more than the dry detail as to the spindles employed in Yorkshire. And as to the falling off of a supply, he could not well get over noticing it; but the falling off in the growth of Flax in Ireland was never hinted at, nor was a remedy for the case suggested or laid before the "British Association."

The Flax-spinning and weaving in Scotland, being of vast importance in Dundee, Kircaldy, Arbroath, Dunfermline, Aberdeen and Glasgow, and several other places, were entirely unrepresented. This, before a society composed of noblemen,

and men of science and influence, was, in my humble opinion, a sad mistake, especially at a time when the rival trade in cotton manufacture is straining every nerve to obtain a cheaper supply of raw material. However, as the Flax-spinners of Great Britain and Ireland are now turning their attention more to Indian productions, we may soon find a supply from that great empire that will allow the Dutch, Belgians, and Russians to spin and weave their own produce of Flax and hemp.

As the Leeds Flax-spinner omitted to give any account of Dundee, although it contains forty-four Flax-spinning mills, a few remarks on the subject, as my work may reach North Britain, may be interesting to those connected with the trade in Scotland.

Some few years ago a statement was made by a gentleman in Dublin, Mr. Anketell, before the Royal Dublin Society, when the question was put before that very intelligent body, "Can Agriculture alone employ the people of Ireland?"

Mr. Anketell adverted to the increase of the spirit of general enterprise consequent on the success of the great staple trade of England, and the effect of the increased prosperity of the people in developing the higher arts. He adverted to the rise and progress of the Flax and silk trades—the manufacturers in the precious metals—the cotton manufacture, its origin, rise, and progress, forming the greatest wonder of industrial enterprise that ever contributed to the glory of a nation. Mr. Anketell dwelt on the present prodigious extent of the cotton trade, which, from infantine proportions half a century since, has now assumed colossal importance, whether viewed in any of its aspects, the busy hum or the thousands it employs in the giant factories wherein the wondrous agencies of native power are developed, the monuments of the genius of Hargrave, Arkwright, Compton, and Cartwright, which supplied the delicate machinery that gives to the whole world the fabrics produced by the manufacturing industry of England. Mr.

Anketell enumerated the various manufacturers in which England excels the world, and remarked the amount of perseverance, exertion, and patriotism, which had been exerted to bring them to their present pitch of glory. He compared England's present greatness, resulting from her manufactures, with the poverty and meanness of her condition before her manufactures were known or cultivated, and concluded by asserting that whether England was considered as supplying the wants of her people at home through the medium of inexhaustible divisions of labour, or exporting her commodities abroad, it should be concluded that the glory to which she had arrived was owing principally to her manufactures, which employed forty-four per cent. of her people, thus enabling her to stand without a rival among the nations. Mr. Anketel having concluded this part of his subject, proceeded to the consideration of the effects of manufactures on the prosperity of Scotland. He described the agricultural condition of Scotland as being declared, on authority, to have been truly wretched previous to the period of the Union. Even fifty years ago it was far behind that of England. The woollen trade was never remarkable in Scotland, yet, in the article called tweeds, it has become famous; and the town of Dundee owes its prosperity to their manufacture.

However much I feel pleased to agree with Mr. Anketel respecting the cause of England's prosperity, I am obliged to differ from him when he says,—“The town of Dundee owes its prosperity to the manufacture of tweeds, as by the following statistics of that town it is evident that the Flax-spinning and weaving has been the chief cause of its prosperity, all of which has taken place from the year 1823, as in 1824 and 1825 there were only thirteen Flax-spinning mills in Dundee, and in 1851 there were forty-four mills.

STATISTICS OF DUNDEE.

Since the establishment of the old company, the population,

trade, and public works of the town have been greatly increased. In 1823 the population of Dundee was about *thirty thousand*. The population of Dundee is now, in 1859, about *seventy thousand*. There were in 1824-5 only thirteen Flax-spinning mills in Dundee, now there are *forty-four*. The rental of the Flax-spinning mills, as assessed for police purposes, was, in 1825, £982; now it is £6,787, or about *six hundred per cent. of increase*. There are besides, extensive power-loom weaving establishments; also manufactories and other public works which were not in existence in 1825. There is now one Flax-spinning establishment in Dundee of a larger rental than all the mills which existed in 1823. The whole of these works are dependent upon one public company only for a supply of gas, having no private supply of their own. The rental of Dundee in 1825 was £59,509. The rental is now upwards of £100,000. The docks and harbour of Dundee have been also greatly extended, and the trade of the port increased. The sum now expended upon the harbour works considerably exceeds £400,000; and there is a large dock in the course of formation, which, when completed, will almost double the present wet dock accommodation of the port. In 1825 the expense of lighting the harbour of Dundee with gas was £6; it is now about £170 per annum. The revenue of the harbour of Dundee amounted in 1823 to £9,149. In the last year it amounted to about £25,661. This brief statement of the position of Dundee in 1823 and 1825, contrasted with its present position, shows the very great increase in the population, manufactories, and trade of the town and harbour.

IMPORTS OF FLAX INTO DUNDEE IN 1858.

Comparative statement of sundry imports and exports at the harbour of Dundee, from January 1st to December 31st, 1857 and 1858 :—

IMPORTS :

Goods, Foreign and Coastwise.		1857.	1858
	Quality.	Quantity.	
Flax Tons	30,135	18,402	
Flax codilla. „	6,781	3,646	
Hemp „	995	3,113	
Hemp codilla „	29	300	
Jute „	8,159	13,828	
Total . . .	46,099	39,280	

EXPORTS.

		1857.	1858.
Osnaburghs . . . Pieces.	10,200	6,131	
Sheetings . . . „	108,403	122,129	
Bagging . . . „	6,652	7,448	
Canvas . . . „	80,543	49,198	
Dowlas . . . „	9,170	11,978	
Sacking . . . „	156,008	197,051	
Sundries . . . „	40,587	35,001	
Total . . .	411,563	473,936	
Flax-yarns . . . Tons	1,288	1,205	
Tow and jute yarns „	3,304	3,067	
Total yarns	4,592	4,272	
Flax . . . Tons.	266	1,932	
Tow . . . „	265	317	
Total Flax and tow . . .	531	22,49	

Dundee Advertiser.

The falling off in the imports of Flax, and the great increase of jute into the trade of Dundee, for mixing and spinning with Flax, caused me to urge the fact on the notice and consideration of the Chancellor of the Exchequer; when I wrote him (Mr. W. E. Gladstone) on the 14th of December, 1863, pointing out the advantage of having the Rheea fibre introduced into the industry of Lancashire in place of cotton—as it, like the jute in Dundee, would soon take a leading position in that district—and I gave him additional evidence, by quoting the words spoken to me by the late Sir W. Brown, Bart., of Liverpool, “That such new fibres along with Flax and hemp would tend, if introduced, to the revolutionising the trade of Liverpool by my cottonizing process.” But although Mr. Gladstone was an early disciple or convert to the teaching of the late Sir R. Peel, whose policy was “buy in the cheapest, and sell in the dearest markets,” the cheap Rheea fibre at 6d. to 8d. per pound, in place of cotton at 2s. per pound, to make clothing for the British army in India, and also the Indian army, was not thought worthy of the notice of the finance minister. See his answer:—

“11, Downing Street, Whitehall.

“December, 18th, 1863.

“SIR—I am desired by the Chancellor of the Exchequer to acknowledge receipt of your letter of the 13th instant, and I am to say that the subject to which it refers is a matter not within his province.

“I am, Sir, your obedient servant,

(Signed)

“CHARLES L. RYAN.

“Mr. J. H. Dickson.”

I sent with the letter of the 13th the yarns and twilled cloth spun and woven on cotton machinery; an article superior in strength and appearance to any cotton cloth ever made for trowser stuff for the army in a hot climate, and the parcel was returned to me *unopened*, although I took care to say in

my letter that the material could be had at one half the price of cotton, and that the question was one of economy in the estimates, and came more immediately under his notice than Sir C. Wood, or any other of the ministers to whom I had written. However, as his colleague Earl Russell says, "nothing prospers in this country until it has had a good deal of soaking," I suppose I must rest and be thankful, and as long "soaking" or submerging, called steeping, makes fine quality of fibre, I must wait the convenience of the "soaking" cabinet of Gladstone and Co., in order that something fine may be had from the hands of the ("all the talent,") government.

As jute is seldom or ever more than half the price of Flax, the increase imports of jute and the increase export of yarn in 1858, shows a true statement of the cause of prosperity in Dundee, with this difference, which has not been noticed, that what is called Flax-yarns is made from one-half jute, if not two-thirds of the whole 1,932 tons exported in 1858, the Flax and jute being mixed in the sliver before being spun, and may we not hope that the day is not far distant when, through the influence of our rulers, the merchants engaged in shipping their linens from Galway to America by the new line of steamers, may plant in Connaught some branch of their Ulster manufactures, first sowing the seed of the plant, which has so abundantly rewarded the farmer this year (1858), for any extra care he has bestowed on its growth and preparation.

As few of the Connaught farmers, or indeed of the English or Scotch farmers, are aware of the great advantage of Flax-growing, and of the real benefit of manufactures to families who till the soil of Ulster, I shall add an extract from the *Coleraine Chronicle*, which may be worthy of consideration :—

"There is at present a little girl, now sixteen years of age,

in Ballygoney, two miles from Moneymore, who has woven during the last four years not fewer than 216 webs of linen cloth, being one every week, and two in each year over. Every Saturday during the whole time she wove none, but was employed on that day in sewing and washing for herself."

According to my calculation, this girl made, at 7s. 6d. per web, which is a low figure for coarse linen, £20 5s. per annum, and as that sum is sufficient to pay the rent of at least fifteen if not twenty acres of land in that country, I cannot but think that it presents to farmers a sufficient reason for acquiring a knowledge of the use of the spinning-wheel and shuttle, as well as of the plough. If the people of Connaught are open to receive instruction, I am certain there is, in the above example of youthful industry, sufficient to show them that, if they go to work like this Ulster girl, with the same energy and perseverance, they cannot fail to promote Irish manufactures; they will not commence at the wrong end, like the Manufacture Board of Essex Bridge, Dublin, in 1851.

The English and Scotch spinners are now paying for Armagh hand-scutched Flax 10s. 6d. to twelve shillings and six-pence per stone of 16 $\frac{1}{4}$ lbs. which I frequently bought for them at 5s. 6d. to 6s. per stone; and they are now paying 10s. 6d. to 16s. per stone for mill-scutched Flax, which for many years I bought on an average of from 7s. 3d. to 9s. per stone.

Ireland can and should supply all her wants, and if the people of the South were only once to taste of the sweets of such industry, they would get rid, not only of provincial but of national vanity, and be no longer as Swift has said—

" Deluded mortals whom the great
Chose as companions 'tête-à-tête.' "

To which I shall add,

Proud of superiority that never can,
That never ought to be the lot of man.

I should rejoice to see the names of my countrymen enrolled on the page of Irish history, as they were from the years 1730 to 1790, as an industrious and patriotic people, out of the reach of the demagogues; men who, to foster jealousy between the English and Irish people, debase talent, and neglect opportunity. I have ever been confident that such is, to the greatest extent, a prostitution of acquirements, that ought to have been turned to good and patriotic purposes; but I am aware that many articles have been written, and unfortunately for Ireland, still are being written in newspapers, with a view to create a sale for them. As Hudibras says,

“ Books and money laid for show,
Like nest eggs to make clients lay.”

It is still fashionable for some of the Irish journals (of the Duffy stamp) to abuse everything English; unless they kept up the fire, they would be considered lukewarm in the cause of “Ireland for the Irish,” and therefore to retain their patrons, they find it necessary to hold up on a distorted mirror the blacker crimes and more heinous faults of a sister people. If they were the true friends of Ireland, they would write differently, and by their publications let the world see that their motto has been and still is, “*Amiens humani generis*.”

I will here call the reader's attention to the expressed feelings and views of the Conservative press of Dublin, on the condition of Ireland, in order that he may know who are the real friends of the people.

Let us now glance at the existing state of manufacturers in Ireland. The most recent returns on the subject show that in 1839 there were at work 95 factories in all, viz., cotton, 24; woollen, 31; Flax, 40; and the number employed therein was 14,870. By a parliamentary paper, published in 1847, it appears that the number then employed in factories was 22,591 and of these 17,000 odd were in Ulster, whilst in Connaught not one one was to be found.

Now it is manifest from this outline how little has been accomplished, and how extensive is the field of labour on which the friends of the manufacture movement have entered. The quantity of wool grown in Ireland is very considerable. The number of sheep, as given by the census of 1841, was upwards of two millions; and if the wool produced were all manufactured at home, instead of being exported to France and England, a vast amount of remunerative labour would thus be provided, and squalid misery, such as exists in the liberties of our cities, be thereby relieved.

The wool which we export to France forms the substance of the beautiful dresses called *mousseline de laines*, but which cannot, for our want of manufacturing industry, be manufactured at home; and our countrywomen would have the gratification of wearing a favourite dress under the pleasing reflection that they were adorned with the products of Irish looms.

Again, as regards cotton wool, we are unable to import it direct from the Southern States and Surat, because we have no manufactures to send in its place; and we are obliged to procure it by trans-shipment from England. Under these disadvantageous circumstances, we never can have a cotton trade until we become, to some extent, a manufacturing country. "The man," as Sir R. Kane well observes, "who shall first import a bale of cotton direct to Killaloe, and have it manufactured there, to be in turn exported in Irish fabrics, will have wrought a social revolution."

The linen trade is the only department in textile manufacture of which Ireland can boast; and even this is almost entirely confined to Ulster. Why should it not be extended to the other provinces, bearing in its train the same prosperity and independence which it has created in the north? It is a trade which the eminent authority we have quoted above describes as giving employment from a given surface of land

to a greater number and a greater variety of individuals than any other branch of human occupation. From the hands of the farmer the Flax proceeds to the dresser, the spinner, the weaver, the bleacher, the embroiderer, &c., affording remunerative industry to each to a great extent, and yielding an amount of profit with which no other agricultural product can at all be put in competition. The industry which it creates is both agricultural and manufacturing; and no more effectual method could be devised of ameliorating the condition of the working classes in the south and west of Ireland, and removing the oppressive burden of indolence upon the resources of the land, than by the rapid extension of the culture and manufacture of Flax. This important topic, we are happy to find, has been occupying the attention of the Manufacture Board; and assuredly they could not devote their time and energies to a more practical useful measure, or one better calculated to accomplish the object they have in view. Let any thinking man look at Belfast, with its numerous factories, its crowded harbour, its marts of commerce, and daily increasing prosperity, and he will have abundant proof of the blessings of the linen manufacture. And, after gazing on this picture, let him change his field of vision, and turn to Galway. What a contrast is here! Yet what is to prevent Galway from participating in the improvements which Belfast so largely enjoys? With railway communication to Dublin, the market for her produce will be opened up, and by the aid of improved machinery, the Flax can be made ready for the markets. The path to prosperity is before her.

Having collected everything that in my humble opinion could be thought deserving of notice on the Flax question, I insert the following brief history of Flax-culture, written, as I am informed, by a Belfast gentleman, whose family had been largely engaged in the linen-trade of that very prosperous city.

OUR STAPLE MANUFACTURES, PAST AND PRESENT.

The history of Flax and Flax-culture belongs to nearly every nation of the globe. No writer, however ancient the date of his annals, nor any historian, however remote the period of his researches, has yet been able to discover the early advents of that culture. Flax-plants grow in all climes, and thrive under every variety of temperature. Of course the class of produce varies to some extent with atmospheric peculiarities; still, from the equator to the pole, we may find different descriptions of the one plant, and in many instances it exists among the natural produce of the soil. Thousands of years ago, and long before Pharoah's prime minister, Joseph, brought into practice the first system of corn laws ever known to the world, Egypt's farmers and Egypt's operatives were learned in the growth of the raw material, and cunning in the mysteries of weaving linen fabrics.

Under the Mosaic economy, it is evident that the value of Flax and its products were fully estimated, special enactments having been set forth for the exclusive preservation of that manufacture. One clause of the acts then promulgated most peremptorily interdicted the use of mingled linen and woollen fabrics as articles of clothing. Textile coalitions were consequently watched with as much jealousy in those days, as cabinet coalitions are at the present period.

Throughout New Zealand's immense tracts and prairies Flax is found growing to the height of six or even seven feet, numerously branching off at the top, and exhibiting great strength of stem. The aborigines of that country use the fibre in making ropes, cordage, and a very coarse description of cloth. Amid the classic isles of Greece,

“ Where burning Sappho loved and sung,”

the Flax crops were cultivated thirty centuries ago with all that attention to scientific skill which distinguished their early history. Several of the most learned of the Grecian

philosophers delighted in husbandry as much as they deprecated war, and one of them has stated that the management of a farm was of more importance than the conducting of an army.

Many differences of opinion exist relative to the introduction of Flax cultivation into Ireland. Some historians tell us that the Phœnicians first taught the Celts how to grow the fibre, spin the yarn, and weave the cloth; others say that the art was introduced in the twelfth century; and a third set of opinionists tell us that the system of Flax-culture had no existence until after the fourteenth century. We do not find any account of Flax having been grown in England until the reign of Henry VI., when the Earl of Hertford wielded the baton in Britain's cabinet. The culture of the plant was then enforced, as it appeared, to raise material for fishing nets. Dressing the straw after the steeping process was then little known, and scutching had no existence, the fibre being separated from the woody substance by hand labour alone. Macpherson informs us that Flax was grown, and linen woven in the days of Henry III., some time between 1216 and 1272. Leaving those points to be settled by those who have more leisure, we may state that, as Ireland exported linen to England in pretty large quantities during the fifteenth century, there must at that period have been an extensive area of land set apart for Flax-culture—we mean extensive, as compared with the quantity of soil then under the spade and plough. The earliest statistical record of Flax-growing in Ireland, so far as we have been able to discover, does not extend beyond 1696. That year was rendered memorable because of King William* having repealed the taxation previously imposed on all Flax, hemp, thread, yarn, or linen exported from Ireland to England or Scotland. It appears that the quantity of land

* This is the King who is still condemned by the Irish traitors; but especially by those who, under the name of Ribbon-men, are of the Phoenix Club fraternity.

then under Flax was only about 950 plantation acres. A century afterwards, the total breadth similarly cropped had extended to 10,000 acres. At that date the value of Flax-seed imported into Ireland was set down at £120,000, and the quantity of undressed Flax landed from foreign parts was estimated at 3,500 tons.

In the course of these papers, we have frequently had occasion to notice the policy pursued by the Prince of Orange in reference to Ireland's staple manufacture. That monarch exhibited an enlarged system of mercantile economy, very far in advance of the age in which he lived. The gates of commercial freedom had long been closed against Irish manufactures, and when he left the way clear, and gave native enterprise a fair field, rapid improvements and extended business almost immediately followed.

The year preceding the repeal of fiscal duties, the total exports of linen-cloth from Ireland only reached 320,000 yards, valued at £18,000. We have already shown that the eighteenth century was remarkable for the advances made in the linen-trade through all its phases, and we now give the account of the exports for the different centenary epochs:—

	Yards.	Value.
1695 . . .	320,000 . . .	£18,000
1795 . . .	42,780,000 . . .	£3,000,000

While such satisfactory advances had taken place in the demand for the manufactured article, linen-yarns also felt the impetus of unfettered trade. Exports of yarns increased from 5,400 cwts. in 1695 to 34,000 cwts. in 1795. During the American war there had been very serious inconvenience felt by the Irish farmer, in consequence of the inadequate supplies of Flax-seed, and the same cause extended from the homestead of the Flax-grower to the markets of the linendraper. The quantity of seed saved by home-growers in those days was

still less in proportion to the quantity of Flax raised than it is at present, and the seed taken off the straw usually turned out unfit for sowing; spring supplies were, consequently, almost solely made up from foreign importations. At the end of 1808, and when the Duke of Portland, Lords Bathurst and Castlereagh, were the leading trio of Downing Street, an order in Council was issued, which showed considerable narrow-mindedness, relative to British trade with America. That movement gave so much offence to Brother Jonathan that, in a fit of retaliation, he laid an embargo on all exports from America to the United Kingdom. Of course, Flax-seed was among the prohibited articles, and, as the supplies previously forwarded had run up to 30,000 or 35,000 hogsheads, the embargo caused no little alarm among the people of Ulster. Unfortunately, too, it occurred that at the very same period, the respective monarchs of Russia and Holland had also set up the barricades, thus giving no hope of any quantity of Riga or Dutch seed coming forward.

Under such a state of affairs, we need scarcely say that the Ulster agriculturists were placed in the most awkward position. They had made the usual preparations for the Flax crop, and just at the critical time when the supplies from America, Russia, and Holland, should have been coming forward, they found matters in the most unfavourable condition. On the 27th of December, 1808, a meeting of the leading merchants and drapers connected with the linen-trade was held at Armagh, for the purpose of sending petitions to the King and the Commons, praying for an immediate alteration of the orders in Council. That meeting was attended by Mr. John Hancock, Mr. John S. Ferguson, Mr. Christy, Mr. Phelps, Mr. Robert Williamson, and a host of others then largely engaged as linen merchants, drapers, and bleachers; but no definite arrangements were effected. Two or three weeks afterwards a second meeting was held, and at that

convention a memorial was got up, and forwarded to both houses of Parliament. From that document we take a few extracts. After referring to the shortness of the supplies of seed, the memorialists stated as follows:—

“Flax is now very considerably advanced in price, in consequence of this deficiency, and, by reason of the increasing demand for Great Britain, on account of the failure of the usual supply of that article in the ports of the Baltic, must rise still higher, in case we are disappointed of the abundant supply of Flax-seed for the ensuing season of sowing. The present price of Flax is more than double what it was nine months ago. By a return to the Linen Board, there appear to be only 6,000 hogsheads of last year’s importation fit for sowing now in Ireland. The annual supply from Holland, Riga, &c., in case of no interruption, does not exceed 10,000 hogsheads, and the usual quantity sown in Ireland amounts to 45,000 hogsheads, and 35,000 hogsheads were usually imported from the United States of America. If, in consequence of the embargo, that supply be cut off from coming to Ireland, the situation of the linen-trade in this country must, in the course of the ensuing summer, be critical in the extreme; a stop must be put to the manufacture, and upwards of half a million industrious inhabitants thrown out of employment.”

The document concludes by imploring Parliament to reconsider the impolicy of the order in Council, and was signed by Thomas Phelps, John Hancock, James Christy, and William Dawson.

To the memorial, after some deliberation, the Chancellor of the Irish Exchequer sent an official reply, regretting, in the usual stereotyped phrases, that circumstances over which the government had no control rendered it necessary to adopt a certain course of policy towards America; but he hoped that, for the future, Ireland would be independent of other countries, by producing an ample supply of Flax-seed for her

own requirements. This is all very excellent, in the way of "live horse and you'll get grass" philosophy; but, for the time, the consequences were very disastrous in every department of the linen manufacture. Flax-seed, which had been disposed of a short time previously at 40s. to 60s. per quarter, arose to £20 and £22 per quarter, or upwards of 50s. per bushel. Before the close of the season, some parcels were sold in Belfast at twelve to eighteen guineas per hogshead.

It was well observed by the gentleman who presided at the Armagh meeting, that any great dearth or scarcity of Flax-seed in Ireland affected all ranks of society, from the landlord to the quill-boy.

As soon as the alarm about the deficient supplies of seed had found its way through the country, Flax fibre rose fifty per cent. Qualities which previously sold at 9s. per stone could not be had under 13s. Many dealers bought largely in the local markets, and stored the lots away in secret places, expecting rates to advance to two guineas a stone.

In the meantime, hundreds of spinners were thrown idle, wheels were reluctantly cast aside, and the click of the reel was rarely heard at the cottager's ingle nook. Linens, whether in a finished or in a brown state, were for a few weeks eagerly bought up by speculative purchasers; but the value thus given to goods had a very backward influence on sales. Consumers became alarmed at the extreme range of prices, refusing to purchase the usual quantities, and thus business fell off considerably. Like all other excitements, however, the fever at last lulled itself to comparative calmness, and before the middle of that summer, affairs to a great extent resumed the ordinary course. The government aroused itself to action by the strenuous representations made to ministers; and a bounty of 40s. per quarter, or 5s. per bushel, was offered to the importers of the first 50,000 bushels of Flax-seed brought into Ireland, "such importations to be landed before the 1st of April."

That liberal movement produced some good results; but, after all the exertions made, it appeared that, in the middle of the above-named month, only one-half the usual quantity required for sowing had arrived in the country. Rates for American Flax-seed at the Dublin market were then eighteen guineas, say £22 in bank-notes per hogshead.*

The history of the corn trade in the spring of 1847, and that of the Flax-seed speculation in 1809, present many features of similarity. Immense sums were realised by those who took early advantage of the market, and were satisfied with the ample margin of profit then to be had by holders. On the other hand, numbers that refused to sell in the early spring were ultimately obliged to part with their stock, at a considerable disadvantage to themselves, before the end of the season. The speculators of 1809, like those of 1847, did good service to the country by the additional supplies which their transactions were the means of introducing into the markets; yet, when any of those merchants went down, their fall was exulted over by many of the stupid and unthinking, as though they had been the greatest enemies of society. No doubt, great evils have arisen through excess of speculation; but what would the world of commerce have been had the cool and the calculating, and they alone, acted as pioneers in mercantile campaigns? Where might we have looked for our railroads, our ocean steamers, and vast factory system—nay, our agricultural as well as our commercial progress, if the much-abused stimulus, speculation, had not infused its life-blood into all the arteries of trade and commerce?

The author of the above brief but well-written sketch of

* The difference between payments made in gold and those made in paper currency was very material for some years previous to the close of the war with Napoleon. It was quite usual with the Belfast merchants and traders of those days to offer goods at a certain sum if paid in gold, and a very different figure if paid in bank-notes.

Flax-culture in Ireland, does not altogether condemn speculation ; he feels confident and convinced that speculation, when not driven to excess, does good ; and that men of the cool, calculating school, are too much of the stupid race to do much good for others, if any for themselves ; and he also knows that but for the sanguine spirits that pushed on our railways and steam-ships, with our telegraphs, and other gigantic wonders of the age, that we must have been behind other nations ; whereas, we have the honour of leading in all that enterprise and genius can lay claim to in the way of improvement. A man of inventive mind can feel as happy and at home with himself alone in a garret, if, in his sanguine moments, he feels certain by his labours to overcome a difficulty, as any prince or potentate can do in holding a drawing-room for his visitors. I have myself enjoyed the pleasure of such a feeling ; I knew I could surmount all the difficulties that lay in my path ; and I can endorse the words of Buffon, who said :—"Invention depends on patience ; contemplate your subject long ; it will gradually unfold itself, till a sort of electric spark convulses the brain, and spreads down to the heart a very glow of irritation. Then comes the luxuries of genius ; the true hours for production and composition ; hours so delightful, that I have spent twelve and fourteen successively at my writing desk, and still been in a state of pleasure." Buffon is not the only authority on the pleasure resulting from contemplation and hours spent at a writing-desk. The most meritorious objects are the pursuits which raise the character of human nature, and promote its civilization, its refinement, and its dignity. My experience leads me to believe (for the last three years in particular) that the civilization and social advancement of our great Indian empire depends as much upon the production of the man of genius, for securing internal peace, as it does on good government ; and hence it is that I write and publish on the growing and

my mode of preparing, spinning, and manufacturing the fibres of India, confident that it will benefit the present and coming generations. We are bound to the natives of our Indian territories by the same obligations of duty which bind us to all Her Majesty's other subjects; and those obligations are to impart the instruction which is so necessary to civilization. So long as I am blessed by Providence with health and strength to make my views known through the press, I will, like Buffon, not think twelve or fourteen hours so spent at my writing-desk otherwise than a state of pleasure.

Some people doubt the possibility of having pleasure in doing what we conscientiously believe will benefit our fellow men, even in the midst of adversity; but history tells us that some of our most learned writers have found both comfort and benefit in affliction when so occupied. It is another proof, that there is scarcely any situation, however unfortunate, which does not admit of alleviation; it is so ordered by a kind Providence, and is not lost upon the true Christian. When troubles overtake him, he has sufficient strength of mind to contemplate that, when inquietude and adversity are only calculated to render the web of fate more difficult to be unravelled, his knowledge of the inscrutable decrees of the Divinity, suggests the necessity of patiently yielding to his power. It hence appears there is a possibility of being tranquil in our most afflictive trials in life. In proof of this, I give the following list of learned authors who suffered imprisonment, and who found that the consolation and pleasure their enemies wished to deprive them of was always at hand, when the writing-desk was resorted to.

One of our biographers says, "Imprisonment has not always disturbed the man of letters in the progress of his studies, but has often unquestionably greatly promoted them."

Sir Walter Raleigh wrote his "History of the World" in

his eleven years' imprisonment. It was written for the use of Prince Henry.

Bunyan wrote his "Pilgrim's Progress" in prison.

Selden, the learned, wrote in prison the "History of Eadmor."

Buchanan, in a monastic dungeon in Portugal, composed his "Paraphrases of the Psalms."

Boethius compiled his work on the "Consolations of Philosophy" in prison.

Cardinal Polignac wrote the "Anti-Lucretius" in exile.

Cervantes wrote his "Don Quixote" when in captivity in Barbary.

Grotius wrote his "Commentary on St. Matthew," and other works, in confinement.

Margaret, Queen of Henry IV. of France, confined in the Louvre, pursued warmly the study of polite literature, and composed a skilful apology for the irregularities of her conduct.

Voltaire sketched, and partly composed, the plan of the "Henriade," during his imprisonment in the Bastile.

Sir W. Davenant finished his poem of "Gondibert," during his confinement in Carisbrook Castle; and many others might be added to the list.

On this subject the author can speak feelingly and from *dear bought experience*, as a subsequent narrative will testify.*

Having now, in the year 1863, brought out in public the first lot of yarn and cloth made from the fibres of India, rheea, plantain, Flax, and hemp, spun separately and mixed with *cotton*, all of which I had spun from time to time, on silk, Flax, worsted and cotton machinery, commencing in

* The Rheea Fibre Company, with a JEW TAILOR as CHAIRMAN, a JEW SOLICITOR, a JEW BOOK-KEEPER and the choice man of the Chairman, as Secretary. See the end for the cause of the failure of the Rheea Fibre Company

1858, and following up by experiments, until in September, 1862, I had my prepared rheea fibre spun on cotton machinery, by the Messrs Birley Brothers, cotton-spinners in Preston, a difficulty that the *spinners of cotton in Manchester* though it *impossible to get over*. Thomas Bazley, Esq., M.P. for Manchester, wrote me in 1861 to say, my material, rheea, &c., &c., sent (by the advice of the Earl of Derby) to the Manchester Chamber of Commerce, "would never come in for the industry of Lancashire, but it might be of great advantage and used by Flax-spinners," but in June, 1862, I informed him of having it spun by Messrs. John Crossley and Sons, on their cotton machinery in Halifax. See his, Mr. Bazley's letter of congratulation on my success at the end of this book, dated 28th June, 1862. Believing that the time will come when the rheea fibre will in a great degree take the place of cotton, because of its not only being a *stronger*, and an *equally fine* material, but not so expensive in producing as cotton, inasmuch as once it is planted it requires no labour or looking after for twenty years, further than to cut it as we do basket-willows, and carry the rods to be stripped by the machinery, I now finish so far the *labour of years*, on the fibre subject by introducing from the work of my late friend, Dr. F. Royle, what will no doubt be interesting to those who desire to see our great Indian Empire more prosperous by their supplying us with fibres, that will *clothe our people*, in place of our depending on the slave-grown cotton of America, a matter so ruinous to the owners of property in Lancashire and the working classes of that great manufacturing district of this country during the years of 1862, 1863, and 1864.

PART V.

Eminent men of genial feeling—The Rhea fibre Company in the hands of Jews the real cause of failure—The late Dr. Royle's work on the fibre plants of India—The value of Bombay hemp before and after being prepared by Dickson's patent machines when sold in Liverpool—The first yarns and cloth made from Rhea fibre, exhibited by the Society of Arts, in May 1860, (Thomas Bazley, Esq., M.P., in the chair,) to assist Dr. Watson to lecture on the value of Indian fibres—Estimates of a factory to prepare the fibres, cost of machinery, labour and profit by working—Observations on the patent machines for preparing green unsteeped Flax or hemp as it comes from the field, and the produce certified by letters and references—Yarns first spun on Flax machinery by Dickson's patent process of preparing fibres in Leeds—Yarns and cloth spun and woven on worsted machinery and also on cotton machinery from Rhea fibre, Flax and hemp, all COTTONIZED, and in a book sent by the noble Earl of Derby to the Manchester Relief Committee—Rope yarns spun at Chatham Dockyards twenty per cent. stronger by Dickson's patent machines, than any ever spun on the establishment, and cause of it being kept back since 10th January, 1860—Rev. George Rowe, of York, on Indian fibres—The supplies of Rhea and similar fibres from Jamaica—Sir W. Hooker and Mr. N. Wilson on the certainty of a supply—Notice of piracy of Dickson's patent liquid to spinners—The acts of bubble companies to catch the patentee—Colonel Abbott's reports on the expenses and profit of cultivating Rhea fibre in India before he left London in 1863—Value of Rhea fibre by Dickson's patent inventions compared with Messrs. Marshall's value in Leeds, by letters of Dr. F. Royle—The value of green unretted Flax and hemp and also New Zealand Flax prepared by Dickson's patent process, when shown and ordered by seven Leeds Flax-spinning firms—Value of the waste for paper—Cottonized Flax, IRELAND'S HOPE, with the aid of the power-loom recommended by his excellency (Lord Wodehouse) the Lord Lieutenant of Ireland, the second day after his arrival—The patentee, Dickson, being the first to introduce power-looms into Ireland in 1838 and correspondence with his excellency on the subject—The *Standard Newspaper v. The Flax movements in Ireland.*

THE FOLLOWING ARE THE PRINCIPAL FIBRES TO WHICH THE PATENTED PROCESSES ARE APPLICABLE.

THE wild rhea of the East and West Indies, China grass, pine-apple, plantain, aloe, and the Himalaya hemp, jute,

and Flax, Neilgherrie nettle, Assam grass and many other fibres, all of which can be obtained in abundance, as stated in the works published by the authority of the East India Company.

Dr. Forbes Royle, the late eminent botanist to the East India Company, in his work published in 1855, draws the attention of the public, in the strongest manner, to the various fibres of India as possessing the most valuable commercial character. At page 376, he concludes:—"When some of the improved methods of separating fibre are successfully applied to such plants as the rhea and wild rhea, the benefits to India and the world will be incalculable. *For they are exceeded by none in fineness, excell all others in strength, and may be both compared to the trunk of the elephant, which can pick up a needle or root up a tree.*"

Of the rhea, says Colonel Vitch (Col. Ind. Rep., 1859, p. 202): "I believe it stands at the head of all fibres." It has only been used as yet by fishermen for their nets. It is found to be exceedingly strong, and capable of resisting the action of water: it is capable of being produced in great abundance—the great obstacle to its extension is on account of the quantity of labour required to remove the fibre from the stalks. It is all stripped off by the nail; we have not been able to find out any machinery that will separate it from the stalk."

Of the Himalayan hemp, Dr. Royle's book says:—"The hemp grown on our mountains, and in the valleys, is far superior in strength to the samples of Russian hemp which have been sent by the Court of Directors. On showing these to the hill growers of hemp, they declared that were they to produce such an inferior article, it would scarcely find a sale.—No Russian hemp will come near it in quality.—The essentially good qualities of the hemp grown in the Himalayas consisting in its strength, divisibility, fineness, and softness of the fibres of much of what is grown there, will make it,

when known, very desirable for many purposes. It has appeared, to all the practical men who have since then examined it, as the strongest fibres with which they were acquainted."

Its capability for ship's rigging and ropes is beyond all question. At Government trials, while St. Petersburg hempen ropes broke at 169 lbs. strain, Himalayan did not break at 400 lbs. Again at recent trials conducted by Mr. Dickson, at Chatham, while Russian hemp yarn broke at 130, that prepared green by Dickson's process broke only at 170; this was 40 lbs. in favour of Dickson's patent. (See pp. 523 to 525).

Jute is the best known fibre of India to our manufactures, and is, perhaps, the more important on account of its peculiar characteristics, and being an acknowledged staple and in great demand. The quantity imported into this country now reaches to nearly 700,000 cwts. annually. Mr. Henley says of this plant:—"In preparing jute, the cultivators push the water-retting process to its utmost limits, short of actually destroying the fibre, by excessive putrefaction." And he adds:—"Bengal jute has now attained such an important position in the commerce of the world, that any suggestion for its improved production merits attention; and there can be no doubt, but that the application to it of the process of preparing the fibre *without water-retting* would effect the most signal improvements in its quality."

This has been sufficiently demonstrated by J. H. Dickson in his treatise on the "Growth and Preparation of Flax and its kindred Fibres."

Were jute prepared by the process hereafter referred to, it would be a fibre of the most valuable kind, possessing qualities of peculiar excellence, and commanding an extensive sale.

Hitherto, all these fibres have been comparatively useless,

Because no machinery, or process, has been found to discharge the stiff gums and resinous matter. The discovery of Dickson's patent process, and the improvement effected by it on the quality of these fibres, is consequently invaluable.

Another Indian authority, Dr. Hunter, says very truly, that the fibre of all plants would be better if prepared without water-steeping.

The patented machines and processes of Dickson's have come opportunely to meet this important want; they are applicable to all the above-named fibres, and also the European Flax and hemp direct from the field, without any water-steeping whatever; thus effecting a great economy as well as improvement of quality.

Dr. Royle says (p. 132): "I gave Mr. Dickson several of these fibres, and he returned them to me in a few days in a state in which I was scarcely able to recognise them, from their soft and silky hair-like appearance; and I have little doubt, but that the progress of experiment will show that this change can be effected at a comparatively small cost."

On all the ordinary Flax and hemp of Europe, the patented processes will produce *twenty per cent. more fibre* from the same weight of plants, than if the old process of water-retting was resorted to in preparing it. Further, it will improve the fineness of the Flax, and preserve its strength at least twenty per cent.

As regards tropical plants, several of them have been found suitable as a substitute for, and also to mix with, silk, cotton, wool, and alpaca in yarns, having the property of receiving the dye in the same vat with the wool; a most important advantage, now for the first time secured by these patented processes, and proved by Mr. Sykes, a dyer in Leeds, at the meeting of the British Association in 1858, when a carpet manufacturer, named Wilkinson, avowed it could not be done. See *Leeds Mercury*, and other intelligent newspapers, on the subject.

A most material advantage is, that the waste or tow from all these plants is admirably adapted for paper of the best description, and the value of it for that purpose cannot be less than from £20 to £30 per ton ; or it can be sold at a good profit of ten per cent. less than the best material now used. The profit of this waste* will alone pay all the first cost of the material.

As examples of the profit derivable from working these patents, the following results have been obtained by the first machines constructed.

Bombay native-prepared rough hemp, at £15 per ton, re-dressed by Dickson's patent machines, only at an extra cost of £4 per ton, sold at £35 10s. per ton, by Messrs. Stephens, Brothers, Liverpool.

The rheea fibres can be imported here at from £20 to £30 per ton. The better qualities can be worked, by this process, to a condition for spinning and manufacturing into silk and worsted mixed goods.

J. H. Dickson has offers from responsible parties to supply a definite amount of the rheea immediately and continuously, 700 tons being contracted for to be delivered within twelve months in London, at £25 per ton.

It may be further stated, that several East India firms are willing to supply any quantity of several of these tropical fibres, delivered in London, at from £15 to £30 per ton ; and the whole average cost of manufacture will be only £12 to £16 per ton, by Dickson's patents, when in operation on a full working scale.

A complete set of machines will cost about £3,500, including the motive power, and which will work about a ton a day.

* When I say waste, I mean the shorts or sweepings of the clean floors, where the material will be combed that will be too short (not half an inch long) to be spun on cotton or worsted machinery, as I have had bank-note paper made from it by Messrs. Grosvenor, Chater and Co., New Cannon Street, London.

The patents did comprise two distinct machines, and chemical process. Now all has been brought into one machine.

1. The *Breaking Machine* breaks out all the woody parts of the plant; the *Scutching Machine* cleans, separates, and heckles the fibres in a new mode, superior to any hitherto used; and the *Cleansing Liquid* takes out all the gum, and makes it perfectly clean and soft for spinning, the entire process being quite simple and easily intelligible, and capable of being managed by an ordinary workman, no skilled scutcher being required to work these machines.

2. Throughout the whole process, no acid, fixed alkali, or deleterious ingredient is used; on the contrary, the liquid employed, amongst other benefits, enables the fibres to bleach and take the dye with peculiar ease, and with much less time and trouble than by the existing process.

3. The expense of working will rather be diminished than increased, as the material can be prepared in much less time, and none of the skilled labour now required need be employed at all. A running stream of water, that is soft and clear, is indispensable in the saving of expense in bleaching and finishing.

The great commercial value of Mr. Dickson's discoveries and patented inventions, has been testified to by several of the best authorities on Indian matters. On May 9th, 1860, Mr. Dickson exhibited to the members of the Society of Arts* forty varieties of goods, manufactured from Indian fibres, prepared by his process and machines by Mr. W. Whittaker, a partner of one of the first-class firms (Messrs. Milligan, Forbes, and Co.) in Bradford, Yorkshire. These goods

* Thos. Bazley, Esq., M.P. for Manchester, was in the chair at the meeting, and Colonel Sykes, M.P., Chairman of the Hon. East India Company, Mr. Hadfield, M.P., and a numerous attendance of ladies and gentlemen were present to examine the first yarns and goods spun and manufactured in England, through Dickson's inventions, from the wild fibres of India.

were exhibited at the instance of Dr. Watson, the successor of the late Dr. Forbes Royle, for the purpose of illustrating his lecture on the "Chief Fibre-yielding Plants of India," which he delivered in the evening of that day to the Society. They were considered most valuable specimens of a new manufacture, and calculated to produce much novelty in our textile fabrics, and to become of as much utility in the manufacture of fabrics for personal attire as have been the fibres of the alpaca, and which, until the patented discovery of Mr. Salt, were considered of little value.

I furnished Dr. Watson with fibres that covered the tables for his lecture, at his request by letter, and it was by my patent process that Mr. Whittaker, whom I supplied with rheea fibre, produced the yarns and cloth (the first ever made in England), and although I lent this aid to the doctor, to enable him to practically point out the value of the material he selected for his coming before (as I am informed, the first time) an audience, I am obliged to say he avoided to mention in his lecture the name of the patentee who, at his request, and at considerable expense, supplied him. It is not for me to express an opinion, as to the cause of the doctor forgetting the common civility of life under such circumstances, but if it was not a noble act to overlook the assistance he had from me, he took care to especially thank the noble broker, who could give him nothing to lecture on—one thing is certain, if the late Doctor Royle had been lecturing on the fibre plants of India, his letters to me proves I should not have been so treated.

ESTIMATE FOR THE MACHINERY, ENGINE,
BOILERS, SHAFTING, ETC., REQUIRED TO
WORK J. HILL DICKSON'S PATENTS
ON FULL SCALE,

*Including Machines, Preserving Liquid, Coal and Wages, for
preparing India Rhea, Plantain, Aloe, Neilgherry Nettle, and
similar Fibres, Flax, Hemp, and New Zealand Flax.*

P L A N T .

	£	s.	d.
A full size Breaking Machine... ..	350	0	0
Twelve scutching machines, £100 each	1,200	0	0
Three washing machines, £80 each...	240	0	0
Three wringing machines, £50 each	150	0	0
Shafting, Riggers, and Pulleys ...	100	0	0
Pipes and Cocks	100	0	0
Driving Bands	50	0	0
Six Vats, lined with zinc, £15 each	90	0	0
Four silk combing machines, £30 each	120	0	0
Two American patent combing machines	300	0	0
Two Screw Gill Slivering Machines, £50 each	100	0	0
Two Carding Engines, £120 each ...	240	0	0
Engineers and Labour fitting up ...	100	0	0
	£3,140 0 0		
One 15-horse power Condensing Engine	£180	0	0
Two 15-horse power Boilers	70	0	0
Setting the same in Brickwork, building Chimney-shaft, &c. ...	100	0	0
	350 0 0		
Total cost ...	£3,490	0	0

ESTIMATED PROFITS FROM WORKING.

The above named Machines will turn off from five to six tons per week of clean, marketable fibre, with the following workers :

2 men at Breaker, 20s. per week	£2	0	0
6 Girls attending, 5s. do. ...	1	10	0
12 do. Scutching, 6s. 6d. do. ...	3	18	0
6 do. attending, 5s. do. ...	1	10	0
3 do. Washing, 6s. do. ...	0	18	0
3 do. Wringing, 6s. do. ...	0	18	0
6 do. attending, 5s. do. ...	1	10	0
3 Men at the Vats, 18s. do. ...	2	14	0
3 Girls attending, 5s. do. ...	0	15	0
1 Silk Combing Machine Manager			
35s. per week	1	15	0
6 Boys attending, 15s. per week	4	10	0
2 boys slivering engine 15s. do.	1	10	0
2 boys carding do. 15s. do.	1	10	0
2 men at the Boilers, 20s. do.	2	0	0
1 Manager, 42s. do.	2	2	0
Total 58 Hands, at Weekly wages	£29	0	0
Five tons of Dickson's prepared rheea*			
would be worth 1s. 6d. per lb., or			
£168 per ton	£840	0	0
Deduct {	Liquid, £6 per ton	£30	0 0
	Wages	29	0 0
	Cost of rheea, six		
	tons, at £30 per		
	ton	180	0 0
	Coals	6	0 0
		245	0 0
	Net weekly profit	£595	0 0
	or £30,900 per annum.		

* J. Hill Dickson had orders for 250 tons of prepared rheea, at £168 per ton, for French spinners, amounting to £42,000, but the JEW COMPANY obliged him to refuse the order.

This estimate being made out when I made use of the patents taken out in 1859, for preparing material for SILK, WORSTED and FLAX-SPINNERS only, the liquid cost £6 per ton, but by my late discovery for COTTONIZING such fibres for COTTON-SPINNERS use, the liquid will not cost £2 per ton.

Six tons of Dickson's prepared clean fine
white finished Flax, worth £75 per

ton 450 0 0

Deduct {	Forty-two tons of			
	Flax-straw £4			
	per ton	168	0	0
	Wages for breaking			
	and scutching	29	0	0
	Liquid, £5 per ton	30	0	0
	Coals	6	0	0
		233 0 0		

Net weekly profit £217 0 0
or £11,284 per annum.

Five tons of Dickson's prepared Italian
green hemp, white and fine, £70 per

ton 350 0 0

Deduct {	Cost of six tons of			
	broken Italian			
	hemp	125	0	0
	Scutching at £4 per			
	ton, wages	20	0	0
	Liquid	20	0	0
	Coals	6	0	0
		£171 0 0		

Net weekly profit £179 0 0
or £9,308 per annum.

Five tons of New Zealand Flax (Phor-

	mium Tenax), £60 per ton	...	...	300	0	0
Deduct	{ Cost of six tons of					
	undressed New					
	Zealand, at £20	120	0	0		
	{ Wages for breaking					
	and scutching ...	29	0	0		
	Liquid ...	...	...	30	0	0
	{ Coals ...	...	...	6	0	0
				185	0	0

Net weekly profit £215 0 0
or £11,180 per annum.

In addition to this profit there is one-fourth of shorts or tow, worth £30 to £36 and £56 per ton to be added; also one ton is allowed for waste in the Flax, hemp, and the New Zealand Flax preparation. Mr. Dickson has been getting 2s. per lb. for the rhea in Bradford, when combed, although, in estimating the profits, he quotes it at 1s. 6d. per lb.

By the patent machine and processes, Flax and hemp, from green unretted Flax and hemp straw, may be prepared in from thirty minutes to three hours, according to the quality of the material to be prepared, and for re-dressing (scutching &c., &c.) Irish hand-scutched, Friesland and Egyptian native-scutched Flax, and also for re-dressing (thoroughly cleansing,) New Zealand Flax (Phormium Tenax), Bombay, Madras, Himalayan, Russian, Prussian, and Italian hemp. The patent process will increase the value of *each* and *all* of the above more than *one-third* in the markets of Great Britain and Ireland, with the further advantage, that any common labourer or girl can attend the machines, no skilled scutchers being required.

The Honourable the East India Company having sent to the patentee's factory, Deptford, forty bales of Indian fibres,

part of which, when finished by the patent liquid, were taken by manufacturers in Amiens and Lyons, and spun and woven into velvets and plush with such success, that several applications have been made for licences to work or use the patents. The patentee, having terms proposed to him by the London agent of an Amiens and Lyons firm for a license for the kingdoms of France and Belgium, begs to inform spinners and manufacturers, that having *refused to supply the Amiens and Lyons parties with the machinery and license to use the patents*, he is now prepared to supply the public with machines, at prices varying from £50 to £250 each, to be worked by either manual, water, or steam power, and to grant the right and give instructions as to the use of the said patents, in India, France, Belgium, Holland, Austria, Italy, Prussia, Russia, Spain, Great Britain and Ireland, the United States of America, and Canada. The patent breaking and also the patent scutching machine can be turned by two men, and with three boys or girls attending the feeding, the produce will be from $1\frac{1}{2}$ to 2 cwt. of Flax, hemp, rheea, or any other fibre, thoroughly scutched and combed daily. Mr. Gardiner, of the firm of Messrs. Gardiner and Mackintosh, Engineers, Railway Works, New Cross, London, witnessed 14 lbs. of Bombay hemp being scutched and combed in half-an-hour, and only one pound loss in preparing, in June 1863, at Nye's Wharf, Old Kent Road, Fibre Works. This was done by steam power.

From among many experiments made by the various manufacturers in spinning yarns from fibres prepared by J. Hill Dickson on his patented system, from wild rheea, wild hemp, Bombay and Madras hemp, Neilgherry nettle, pine-apple, plantain and aloe fibres, Russian hemp, and Polish rhyne, and Italian hemp, New Zealand, Irish, and Yorkshire Flax, the following are selected :—

Yarns from No. 30 lea to 80 spun by Messrs Hives and

Atkinson and the under-mentioned Flax-spinners of Leeds, from green unretted Yorkshire and Irish Flax straw, after being prepared by Dickson's patents:—

Yarns from No. 18 lea to No. 35, spun by Messrs. Benyon and Co. from rhea fibre.

Yarns from No. 10 lea to No. 30, spun by Messrs. Briggs and Co. from rhea fibre.

Yarns from No. 10 lea to No. 12, spun by Messrs. Hill and Son from rhea fibre.

Yarns from rhea fibre, spun by Messrs. Lister and Co., on worsted machinery.

Yarns from rhea fibre and mixed, *half sheep's wool*, by worsted spinners of Yorkshire.

Yarns from rhea fibre and mixed, *half silk*, by worsted spinners of Yorkshire.

Yarns from rhea fibre, spun as silk, by silk spinners of Yorkshire.

Yarns from rhea tow, for carpets, by a carpet manufacturer, Bath.

The Nos. 30, 35 and 80 leas, spun by Messrs. Hives and Atkinson from green unretted Flax, are stronger yarns than if from retted Flax.

The Nos. 30 and 35 lea, from rhea fibre spun by the same firm, is equal to Flax at one-third less cost.

The Nos. 30 and 35 lea, from Russian and Italian Hemp, spun by the same firm, is equal to Flax yarn at double the price.

From these have been manufactured velvet and plush made from the rhea fibre, and cambric and canvass drill, plain cloth, diaper; also moreens, damasks, orleans, etc., and tailor's threads, in the brown state, dyed permanent black.

Several samples of yarns spun, and canvass cord and drill cloth manufactured in the North of England in 1858, from material prepared by Mr. Dickson, were sent by the order of

the Earl of Derby to the Lords of the Admiralty, who had them critically examined by competent men, and afterwards forwarded them to Dr. Hooker for deposit and exhibition in the Royal Botanical Gardens, Kew, as samples of a new manufacture, and similar samples were exhibited at the Leeds Exhibition, in 1858.

Yarns and cloth were spun and woven from the rhea fibre and mohair mixed, by Messrs. John Foster and Son, Bradford, in 1860.

Yarns and cloth were spun and woven from rhea alone by Messrs. Bairstow, Brothers, of Bradford, in 1860.

Yarns and cloth were spun and woven by Mr. Henry Mason, from rhea alone, in Bradford, in 1860.

Yarns were spun from rhea alone by Mr. W. Ramsden, in Bradford, in 1860.

Yarns were spun from rhea alone by Messrs. Addison, Brothers, in 1860.

Yarns and cloth spun from rhea and cotton mixed, on cotton machinery, by Berley, Brothers, Preston, in 1861.

A book, containing samples of the above described cloth and yarn, has been examined by the members of the Cotton Supply Association, and the members of the Manchester Chamber of Commerce, and also by the Executive Relief Committee, at their rooms, through the noble Earl of Derby's courtesy, and desire to forward the views of the patentee :—

“Knowsley, January 12, 1864.

“SIR,—On my return from Manchester yesterday, I received your book of samples. Your letter of the 9th did not reach me till this morning. As I go up to town on Friday, I shall not have another opportunity of conferring personally with the Executive Committee; but I forward your letter and the book to the Secretary, who will lay them before the Committee, and any other manufacturers who

may wish to inspect them. It is, however, no part of the Committee's duty to enter into any negotiation for the purchase of patents, and I cannot hold out the slightest expectation to you of their entertaining your proposal.

"I am, Sir, your obedient servant,

"DERBY.

"J. H. Dickson, Esq."

I did not expect that the Committee, as a body, would entertain my proposal, but I felt pretty confident, that as the noble earl had been the early and chief promoter of the relief fund, that the honour he conferred on me, by introducing my cottonized rheea fibre, Flax and hemp, prepared for being spun on cotton machinery, and also yarn and cloth made from them by cotton machinery to the Committee, that it would create great inquiry for my prepared material, and also machinery, and I am happy to say, I have had some dozens of applications for machines and licence to work them, from Blackburn, Manchester, Bradford, and Oldham.

It must be evident to those who may read the above letter from the noble Earl of Derby to the patentee, that, if his lordship had been Prime Minister in 1860, when the following trial was made on the Italian hemp, prepared by his patent machines at Chatham, and not reported on to the Government, that such injustice would not have been allowed to remain without investigation, if brought before the noble earl; however Lord Palmerston shall have a copy of this work, and I shall again call his attention to the value of my machines for rope making, with a hope to another trial on a larger scale.

ADVANTAGES OF THE PATENTED SYSTEM

IN THE

PREPARATION OF HEMP FOR STRONG ROPE AND CORDAGE,

As demonstrated at the Instance of the Lords of the Admiralty, on the 10th of January, 1860, the particulars of which were to be sent to their Lordships by

CAPT. GOLDSMITH, C.B.,

SUPERINTENDENT IN HER MAJESTY'S DOCKYARD
AT CHATHAM.

The experiments were entirely under the direction of the dockyard authorities, and took place in the presence of Captain Goldsmith, C.B., superintendent*; Mr. Lawes, store-keeper; Mr. Pope, master rope-maker; Mr. Taylor, assistant rope-maker; and the patentee, Mr. Dickson. The hemp was worked on rope yarns, spun on two machines in the spinning department of the dockyard, both machines being prepared for spinning No. 25 for rope; and the result, as recorded by the dockyard authorities, was as follows:—

“Rope manufactured from Italian hemp, green as it was

* Captain Goldsmith and Mr. Lawes both promised that the result of the above trial should be placed before the Lords of the Admiralty, and Mr. Lawes gave me the particulars above stated, and up to last summer, 1862, I found by a letter I wrote to Lord Palmerston on the subject, that no report had been sent to the Admiralty. It thus appears to me, that if a reward be offered by the Admiralty for an improved method of preparing material for rope yarn, “No Irish need apply” at Chatham. However, I shall shortly ask Lord Clarence Paget if he (as Secretary to that branch of the service), considers the ingenuity of Irishmen at such a discount, that they should not have a chance of introducing improvements in the art of rope-making into Her Majesty’s dockyards, and if I have as little satisfaction from his lordship on the subject as I had from Lord Palmerston, I must put patriotism on one side, and try my luck at headquarters in France, by soliciting His Majesty the Emperor of the French to allow me the honour of having my prepared hemp tried in His Majesty’s dockyards.

taken from the field, without any retting or liquid process, but prepared by Mr. Dickson's patent machines.

42½ fathoms of No. 25 rope yarn, weighing 15¾oz.,			
was subjected, before breaking, to a strain of			172lbs.
Ditto	ditto	ditto	178 „
Ditto	ditto	ditto	162 „
In three several trials of strength			512 „
Average breaking strain			170 „

Petersburgh hemp, retted as usual, and spun into No. 25 yarn for rope.

42½ fathoms of No. 25 rope yarn, weighing 10½oz.,			
had three several trials under the same circumstances, and broke at a strain of			138lbs.
Ditto	ditto	ditto	139 „
Ditto	ditto	ditto	116 „
In three several trials of strength			393 „
Average breaking strain			131 „

Mr. Dickson's Italian hemp, being perfectly free from wood, resin, or dust, it spun up hard, level, and close; and, although not heckled, the authorities thought it equal in weight to No. 20 rope yarn spun from their Russian hemp; and Mr. Dickson having proposed that his Italian green hemp, No. 25 yarn, should be placed in competition with the Russian hemp, No. 20 rope yarn (an article largely used in the manufacture of rope in the dockyards) with one-fifth more in weight than No. 25. The result of the latter experiment was as follows:—

No. 20 rope yarn, No. 1 strain, broke		139lbs.
„ „ „ 2 „ „		119 „
„ „ „ 3 „ „		145 „
		403 „

The three strains of No. 20 broke at an average of 134lbs., this is 36 in favour of Dickson's patent.

The best three-inch rope, made from retted

Petersburgh hemp, No. 25 yarn, broke	tons.	cwts.	qrs.	lbs.
at a strain of	4	7	2	0

Whilst three-inch rope made from unretted

Italian green hemp, No. 25 yarn, would				
not break at a less strain than	5	3	2	10

Looking at the result in favour of the Italian hemp prepared by MACHINERY ALONE (without the expense and loss by RETTING or STEEPING in water) as it is pulled and carried from the field, at a saving of 25 per cent., and a gain in strength of 20 per cent., surely the LORDS of the ADMIRALTY will not continue the use of the less strong RUSSIAN RETTED, or rather ROTTED MATERIAL, for the outfit of the BRITISH NAVY, when better and stronger material can be had from INDIA, CANADA, and other of our colonies, which, if prepared by Dickson's machines alone, will not only be more economical, but will make stronger ROPES and RIGGING for our ships, and on which depends the safety of the national property as much as it does on the necessity for safety in using sound timber in building our ships of war. In a word—if the lives of our brave fellows who have to stand *the battle and the breeze*, are to be cared for, surely they should have ropes and canvass, such as will stand a gale and carry them through a storm; or stand the sharper tug of war, in battle.

As parties interested in matters connected with the dock-yard management will naturally say, how was it that Dickson's patent method of preparing and producing the stronger material dropped off, or never got introduced at Chatham, I am obliged, in self-defence, to repeat a few facts that came to my knowledge on my second visit to the dock-yards at Chatham.

On my first visit I had only a few pounds of green hemp and a quantity of rhea fibre, and the master rope-maker told me I must have at least half a hundred-weight of each, as they could not spin less. I therefore left what I had brought down, and returned to London, and in ten days after I sent another bale of green hemp down, and followed it to the dockyard; on my arrival at the hotel I met a party who had heard that in my absence the few pounds I had left had been spun and tested, and that it was so much stronger than any ever spun in the yard previous to mine being spun that the rope-makers were determined not to spin it. I had my suspicion when I left it, that I would not get fair play, and I caused a friend of mine, Capt. Adderley Sleigh to write to Capt. Goldsmith before I went down a second time, therefore I was well prepared for the result. I, therefore, called at once on Capt. Goldsmith, but took no notice of what I had heard, only that I knew that my stuff would stand 20 per cent., of a strain more than the best hemp in the stores, and I hoped he would see me get justice, as I thought the rope-makers were rather inclined not to spin my hemp. He then assured me I should have everything done, and he would see to it himself, and the strain trials were made by his direction in his presence, and I did expect that the promised result, so successful in my favour, would have been reported; but no, the old hands do not like to see strangers introduce improvements that they have not been able to discover, after thirty or forty years' residence at their ease in the employment of Her Majesty, and consequently my superior method of cleaning hemp, before being spun, by which means the yarns are allowed to be twisted, more close, level and strong, was allowed to pass, as a matter not to be reported worthy of the notice of the Lords of the Admiralty. I was then negotiating a sale of my patents to Mr. Whittaker, of Bradford, for £10,000, and was telegraphed to when at Chatham to

return to London, and I lost sight of the Chatham trial, expecting to close the sale to Mr. Whittaker; but as he failed to carry out his purchase, after paying £850 on account, and my newly-invented machines are an improvement on those I had in 1860, I will, on the opening of Parliament, have the facts brought out, unless Lord Clarence Paget orders me to have a fair trial in some other of Her Majesty's dockyards.

The patentee being applied to by the Rev. George Rowe, Government Lecturer on Geography, Training College, York, for a supply of his prepared Indian fibres with yarns and cloth made from them, for the purpose of illustrating his Lecture on the Fibre-yielding Plants of the East and West Indies, which he delivered on the 10th February, 1861—felt happy to forward to the care of the rev. gentleman, a well assorted box of his prepared fibres, &c., &c., and had, in a few days, the following letter in reply:—

“33, Lord Mayor's Walk, York.

“February 12th, 1861.

“DEAR SIR—I send off to-day by the Great Northern Parcels Office, the small card box filled with the specimens of the rheea fibre, &c., which you so kindly lent me for exhibition at the *soiree* of the Mechanics' Institute of this city, on Wednesday evening last. I believe you will find that I have taken the greatest care of them all; and hope they will reach you safely. The samples, showing the gradual change from the rough stalk to the silky-looking fibre, were to me, and to others, extremely interesting; and I should rejoice in the possession of similar examples for future use. It was examined by several practical men from the West Riding, and no doubt expressed of its excellence and prospect of introduction if only one question could be solved—Can we depend upon a regular and large supply? If so, we

think it may become such another success as the alpaca wool trade is.

“The general application of your process, whereby a few hours is made to do the work of days on hemp, &c., also excited much admiration. Thanking you for the loan of this series of samples, and expressing the pleasure I shall have, to know that the ‘new fibre’ is working its way into successful competition with the old ones,

“I am, dear sir, yours faithfully,

(Signed.) “GEO. ROWE.

“J. Hill Dickson, Esq.”

The rev. gentleman again requested colonized specimens for his lecture, in the month of February last, 1864, which I sent him.—J.H.D.

SUPPLY OF MATERIAL.

As the question of a regular supply of these new materials for spinning and manufacturing has been asked by the most extensive firms in Manchester, Leeds, Bradford, and Halifax, where the patentee exhibited the specimens in every stage of preparation, up to yarns and cloth, and all inquirers appeared to doubt the certainty of a supply being had, and consequently refused to aid, in any way, the patentee in his views of introducing, through a public company, an additional supply of raw materials for our manufacturers; and as Sir Wm. Hooker did, at the request of Mr. Dickson, forward to him, from the Royal Botanic Gardens, Kew, a large assortment of East and West Indian fibre-producing plants to prepare and finish for the Leeds Exhibition in the autumn of 1858, and has exhibited in the museum at Kew specimens of Mr. Dickson’s prepared fibres, and yarns, and cloth made from them, and has written to him with most valuable information on the subject of a supply from Jamaica, where (as Sir William’s letters prove) the material may be had in

abundance; and, in addition to this, a gentleman, who is well acquainted with the resources of Jamaica, Mr. Bourne, told Mr. Bazley, M.P., and other Manchester gentlemen in the Chamber of Commerce, that there is a million of acres of land in Jamaica suitable to the growth of cotton, and the same will produce rhea, plantain, &c.; and 20,000 labourers could be had without inconvenience to other productions—who should feel for the wants or losses of the cotton-spinners or Bradford manufacturers, of £10,000,000 annually, as Mr. Bazley tells us, when they could have, by giving employment to a portion of 100,000 people that are out of employment in the island, a good supply of rhea, a first-class substitute for wool, silk, alpaca, and mohair, and also cotton, all of which can be sent in less than a month's voyage to Manchester, Leeds, or Bradford. However, as the Manchester spinners now appear “fully convinced of the impotency of dependance on one source for a supply of cotton,” it is to be hoped that they will not continue (like Paddy and the potatoes) to depend alone on one article, cotton, and doubt the spinning qualities of all other fibres, especially rhea.

The patentee had the honour of being advised by the Earl of Derby, in April 1858, to address the President of the Chamber of Commerce, in Manchester, on the subject of his patents, and to draw his attention to the several specimens of rhea and other fibres, and was surprised on receiving the following cool and indifferent reply:—

“Manchester Chamber of Commerce.—Extract from the Minutes—‘Resolved, that the vegetable fibres received from Mr. Dickson, and this day examined by the Board, would, if rendered capable* of being spun and manufactured, be a great

* This is the material, the spinning quality of which the Manchester gentlemen thought doubtful; however, the patentee got over all the difficulty on the cotton mills of Messrs. Berley, Brothers, in Preston, in October, 1862.

acquisition to the textile industry of the country, but the Directors of this Chamber are of opinion that private enterprise, rather than public patronage, should give practical effect to the laudable object which Mr. Dickson has in view.' ”

One would suppose, on reading this from Manchester men, that they never saw a thread of worsted or Flax-yarn, when they say “if rendered capable of being spun,” &c. ; and as to their opinion that “private enterprise, and not public patronage,” should aid the patentee, he cannot but think they now come forward with bad grace to apply to the government to do for them what they denied him to expect, as the introducer of new material for spinning purposes, a fact that practical men admit is of national importance.

The following from Sir W. Hooker will be found highly interesting to those who have doubts as to the supply of fibres :—

“ Royal Gardens, Kew, Nov. 28th, 1859.

“ SIR,—I could not answer for the green plants producing fibres, being cut and sent from Jamaica in a good state to London. I thought you wanted the fibre abstracted from the plant, and that Mr. Wilson could manage. What you call rhea fibre Mr. Wilson mentions in his list as *Boehmeria nivea* (its botanical name), at page 336 of the printed paper I sent to you. It is also sometimes called *Urtica nivea* and *Urtica tenacissima*. They are all one and the same plant, which is also called *China grass*. I have sent out plants of it to Mr. Wilson, and it might be cultivated in Jamaica to any extent.*

* As Sir W. Hooker tells us that rhea can be grown to any extent in Jamaica, why don't Lancashire and Yorkshire spinners (who have tried these fibres, and have such evidence of their value) call on Sir C. Wood, the Secretary of State for India, and show him that it would be for the advantage of this great manufacturing country, if a free grant of land in India be given to a Company of British merchants, with a view to its being planted with rhea fibre. Who can look on the article in its prepared cottonized state, without

“ You are not in the least likely to get jute or rheea fibre from any garden in Europe at this season. Jute is an ugly, weed-like plant, that nobody cares to cultivate, and it must be reared in a hot-house. I do not think anybody has it in England. We had it for two or three years, but nobody paid the least attention to it.

“ It is otherwise with the rheea fibre. We can grow that out of doors ; but then the first frost cuts it and kills it down to the ground. Still, it might be worth cultivating pretty largely in the south of England, and I have no doubt it would yield a good crop if only proper attention was paid to it.

“ Generally speaking, the best fibres are in tropical countries, and those of the East Indies (jute, for example), might easily be reared in Jamaica, if it would sell and yield profit. I do not know if Mr. Wilson has yet reared jute in Jamaica.

“ I should think the leaves of the American aloe would bear a long voyage well, and that Mr. Wilson can send ; but they would be bulky with all their pulp.

“ I am sorry to say, in the winter season, I very rarely go to London, or I would call upon you. In the spring I shall hope to do so.

“ Your obedient servant,

“ W. J. HOOKER.”

Pine-apple, plantain, and aloe fibres can be had in any quantity in Jamaica.

expressing their surprise that our rulers should allow the Lancashire operatives to starve, without making any move towards promoting the cultivation of the plant in India and our colonies. My hope now, in December 1864, is, that the M.P.'s into whose hands I shall place copies of this work will, in their place in Parliament in the coming spring, call on Her Majesty's government to encourage by some means the growth of such fibres, for the great want of material now so severely felt in Lancashire, especially when rheea fibre can be had in England at 2½d. per lb. ; a price that cotton cannot be produced at in any part of the world.

“ Royal Gardens, Kew, Nov. 19th, 1859.

“ SIR,—We have to thank you for some interesting fibres which we are arranging in our museum, with the name of your firm attached to them ; and I am very glad to learn that the various kinds of fibres are becoming better known and valued according to their merits. I explained to the very intelligent person who kindly brought out the fibres to us, that we can only assist you with the foliage or stems of such plants as can be well spared ; but that is seldom the case, except now and then with the rapid growing bananas or plantains, and, perhaps, of these not at the time you would most desire them.

“ In general we are so cramped for space that we only grow as much as we require to show the general nature of the plant.

“ I should strongly recommend your entering into correspondence with some intelligent person in the East or West Indies who takes an interest in such subjects ; and there is, in Jamaica, Mr. Nathaniel Wilson, the intelligent superintendent of the Botanical Garden, Bath, Jamaica, a person who could give you a great deal of information about different fibres, and who would willingly communicate with you, and, for a reasonable remuneration, would procure and send to you ample samples of such fibres as you would desire to have, or to experiment upon. I send you some notes that may be published about the fibres of Jamaica, including those in cultivation there, as well as such as are indigenous. If you desire to correspond with him, you can make use of my name, or better still, you can enclòse this note to him.

“ Your obedient servant,

“ W. J. HOOKER.

MR. NATHANIEL WILSON ON THE USEFUL
VEGETABLE PRODUCTS, ESPECIALLY THE
FIBRES OF JAMAICA.

We have heard rumours, but we trust they are without foundation, of the want of government support to the Botanic Garden in Jamaica, and that Mr. N. Wilson, its active and very intelligent superintendent, has left, or is on the point of leaving the colony altogether. We have ourselves had occasion, in the great Paris Exhibition of the present year, to witness the necessity of some scientific knowledge, in the accurate determination of the plants which yield the various vegetable substances. The Jamaica collection there deposited, valuable as it is in extent, becomes tenfold more important from the correct nomenclature of the objects. To say nothing of the noble collections and fine specimens of the woods, &c., it contains a series of fibres of the island which is more instructive than any other in the Exhibition, because of the great pains that have been taken by Mr. Wilson to give the scientific and vernacular names, rendering it quite clear what is the exact plant which produces such and such fibre; while in other collections we find one and the same name—Pine-apple, aloe, Manilla hemp, &c.,—attached to fibres from totally different (and to several kinds of) plants. *Si nomina pereunt, perit et cognitio rerum.* Such names are worse than useless—they mislead. We believe the latest duties performed by Mr. Wilson in the island were to draw up a report on the progress and usefulness of the Botanic Garden of Bath, St. Thomas the Apostle, for the past year, 1854, for the information of the Honourable the Board of Directors, and to prepare a full series of the fibres, &c., for the Paris Exhibition. As these fibres are described in the said report, we are tempted to offer the following extracts.

“By a continuous and extensive distribution of plants from

this institution of late years, this Botanic Garden has, from a comparative state of obscurity, been brought into one of practical utility and national importance, evidenced by the dissemination of thousands of plants, both useful and interesting, where such were never seen or heard of before. Consequently, the limits of this garden have rendered it totally inadequate to meet the exigency of the present demand, or to do anything like justice to the constantly accumulating collection of plants, being only one and three-quarter acres in extent. The new plants have therefore to be disposed without plan or arrangement, wherever a few feet of spare ground can be found, and consequently they suffer much for want of space. You are aware of this circumstance, as I have mentioned it in my last report. My object in again bringing the subject to your notice is that you may, in conjunction with your general report on the state of the institution, lay before the executive the circumscribed state and difficulties under which the Botanic Garden is now suffering; in order that no time may be lost in remodelling, if possible, and placing the interests of the garden on an extensive, permanent, and useful basis, adequate to meet the increasing wants of the community, and to do justice to a popular, useful, and highly increasing science.

“The Cappan and Cam dye-woods, nutmeg and cinnamon plants, have been distributed to all parts of the island, and I have still a few on hand. As to their perfect suitability to this climate and soil, none need entertain the slightest doubt. The distribution of plants in general have amounted to 1,720, all of which were fully established in baskets, so that no loss could possibly take place but by wilful neglect.

“The desire for growing new plants and adopting new staples is daily on the increase, and the necessity of a more varied cultivation among our agriculturists has become indispensable in keeping pace with the times, and making the

most of altered circumstances. I have many useful plants to recommend for this purpose before closing this report, whereby large tracts of waste land may be re-opened advantageously at little outlay.

“The importation of plants last year has been unusually large, and of a varied description, comprising the following genera, viz. :—

*Rheea.	Gardenia Thunbergii.
Boehmeria nivea.	Rhodostoma gardenioides.
Antiaris saccidora.	Goethea strictiflora.
Datura sanguinea.	Coleus Blumei.
Jatropha panduræfolia.	Maranta sanguinea.
Clerodendron macrophyllum.	Ixora coccinea, superba.
Hoya grandiflora.	Dipladenia splendens.
Ardisia acuminata.	Dipladenia urophylla.
Poinciana Gilliesii.	Hexacentris Mysorensis.
Plumbago Capensis.	Rhynchospermum jasmini-
Van-Houttia calcarata.	florum.
Medinilla speciosa.	Dracæna ferrea, var.
Nematanthus longipes.	Pterocarpus sp. from Pulo
Habrothamus Schottii.	Penang.
Dipteracanthus affinis.	Rondeletia speciosa, major.
Abutilion Van-Houttii.	Pandanus variegatus, &c., &c.

“The first mentioned in the list is the celebrated *grass-cloth* plant, extensively cultivated in China, and whose fibres make the finest cloth the Chinese can boast of. I have not the slightest doubt as to its perfect adaptability to this climate and soil, and in the course of a few years it may become a weed. The *Antiaris* is the notorious Upas tree of Java, about whose virulent properties so many fabulous statements have appeared from time to time. The *Pandanus variegatus* is another addition to our textile plants, and one of the most noble and beautiful plants that ever adorned a garden; the others on the list are chiefly new and interesting, collected in many parts of the world, and selected for this climate.

“By the acquisition of these plants, we can now boast of

* Rheea can be grown in Jamaica and delivered in London in four month's from the day the order is received in Jamaica.

possessing the finest fibres and the greatest number of textile plants in the world, hitherto of no avail to the country in general, and held of little value by individuals, but which may now be turned to the greatest account in a national point of view; the universal demand and scarcity of fibre, its high and daily increasing price, rendering the materials from which it is manufactured of the highest importance. We have many indigenous and eminently textile plants diffused over the island, but partially or not at all known to be applicable for textile purposes, except to a few gentlemen acquainted with the botany of the country. I have, therefore, prepared for general information fifty-one samples of fibres, the greater part of which are indigenous; as you will observe by the following list comprising them:—

* *Yucca gloriosa*. Adam's
Needle, 5—6 ft.

Yucca aloifolia. Common
Dagger.

* *Bromelia Karatas*. Silk-
grass leaves, 10—12 ft.

Bromelia Pinguin. Pinguin.

* *Ananas sativa*. Pine-apple.

* *Musa sapientum*. Banana.

* „ var. *Martinique Ba-*
nana.

* „ *paradisiaca*. Plantain.

* „ *Cavendishii*. Chinese
Plantain.

* „ *violacea*. Violet-
flowered ditto.

„ *coccinea*. Scarlet
flowered ditto.

* *Heliconia Bihai*. Wild Plan-
tain.

* „ *Brasiliensis*. Ditto
of Brazil.

* „ *psittacorum*. Parrot
beak ditto.

Tillandsia serrata. Wild
Pine (epiphyte).

„ *usneoides*. Wild Pine.

Pandanus spiralis. Screw Pine.

Agave Americana. American
Aloe.

* *Canna Indica*. Indian Shot.

Triumfetta semitriloba. Com-
mon Burbark—a weed.

* *Malva viscus arboreus*. Bastard
or Wild Mahoe.

Abroma augusta. Abroma.

Kydia calycina. Tree, 25 ft.

Helicteres Jamaicensis. Screw
Tree.

Guazuma ulmifolia. Bastard
Cedar.

Kleinhoffia hospita. Tree, 25—
30 ft.

Sida sp. Shrub, 6—8 feet.

Ochroma lagopus. Down Tree.

* *Cecropia pellata*. Trumpet
Tree.

Cordia Sebestena. Scarlet
Cordia.

Cordia Gerascanthus. Spanish
Elm.

„ *macrophylla*. Man-
jack, or broad leaved
Cherry.

<i>Cordia Collococca.</i>	Clammy	* <i>Hibiscus esculentus.</i>	Ochra.
Cherry.		„ <i>elatus.</i>	Mahoe.
<i>Brosimum spurium.</i>	Milk	„ <i>latifolius.</i>	Broad-
Wood.			leaved ditto.
<i>Ficus elastica.</i>	India-rubber	* „ <i>tilaceus.</i>	Sea-side do.
Tree.		<i>Lagetta lintearia.</i>	Lace Bark.
„ <i>religiosa.</i>	Pepul Tree.	<i>Daphne tinifolia.</i>	Burn-nose
„ <i>virens.</i>	Wild Fig Tree.	Bark.	
„ <i>Americana.</i>	Wild Fig	* <i>Cocosnucifera.</i>	Cocoa Nut.
Tree.		* <i>Artocarpus incisa.</i>	Bread
<i>Hibiscus Rosa-Sinensis.</i>	Shoe-	Fruit.	
	black Tree.	<i>Pterocarpus santalinus.</i>	Ptero-
„ <i>liliflorus.</i>	Lily-	carpus.	
	flowered ditto.	<i>Crotalaria juncea.</i>	Rattlewort.

“The above list will be found to comprise fibre of such quality and colour, from the cocoa-nut coir to filaments resembling fine silk in strength and lustre of appearance, as cannot be surpassed. I might have extended the list to greater length, but I believe the enumeration will convince the most sceptical, that this island abounds with a highly valuable description of textile plants, some of which are considered troublesome weeds. Those of a ligeneous nature will annually produce two crops of shoots, from which good fibre may be obtained, requiring no machinery whatever in preparing it for market. The method I have pursued, as being the most easy and simple, is this:—Macerate the shoots until the cuticle or outer bark separates freely from the true bark: the latter will then be removed readily from the ligeneous part, and requires but little labour or knowledge to wash, dry, and pack the fibre for market: this would furnish healthy employment for children, the aged and infirm, and would not diminish the amount of labour on plantations.

“For the plantain, finguin, and all similar herbaceous plants, machinery is absolutely necessary to separate and clean the fibre advantageously; when the desideratum is

* The species of cactus called silk grass in Guinea, does not exceed 12 or 16 inches in length,

accomplished, and with one or two years' practice, there is nothing to prevent Jamaica competing with any part of the world of ten times the same extent. The inducement to do so cannot be much greater than it is at present. I find, by a statistical account, that the imports of flax into the United Kingdom during 1853 amounted to 94,163 tons 14 cwt., and, at the exorbitant price of £110 per ton to which the average price of foreign flax has already risen, shows a sum of £10,358,007, which has been paid in cash for foreign flax fibre last year; and since the prohibition of Russian hemp into European markets, prices and demand are increasing daily.

"My motive for laying before you my views on this subject, and preparing the samples of fibre for your inspection is, that I am anxious to submit to you, and through you to the agriculturists and people in general of this island, the desirability and advantages in an individual and national point of view to be derived from the adoption and extensive cultivation of fibrous plants. As I have already mentioned, the great scarcity, exorbitant price, and widely-spreading demand for fibre throughout the world, render the materials of which it is manufactured of much importance, particularly in this country, where labour is scarce and dear, and agriculture at its lowest ebb. Many of these fibres will be found of superior quality, and produced in greater abundance than any grown in temperate regions.

"I have made a very moderate calculation of the produce of an established field with plantains, which I find as follows:—

An acre planted with suckers, at 10 feet apart,	£	s.	d.
will contain 435 plants, and the first year will			
produce as many bunches of fruit, worth 6d.	10	17	6
Each stem will yield 1 lb. of finely-dressed			
fibre, worth 6d.		10	17 6
Amounting, in all, to	£21	15	0

“There can also be raised on the same land, along with the plantains during the first year, a crop of yams, corn, kidney-beans, and sweet potatoes, worth at least £20, thus realizing the first year £41 15s. The second year each plantain-stool will throw up three or more suckers, the quantity of fibre will thereby be tripled, and succeeding years would add to the produce; and if the plantain is cut before the fruit is formed, the quantity of fibre will be fully one-third more, of a far superior quality. I may here remark, that the banana is a much hardier plant than the plantain; it will live and thrive at an elevation where the latter would not exist. In selecting any particular variety of the *musa* for cultivation, great care ought to be observed, as on this point much of the success depends.

“In connection with this branch of industry, other plants, although of less importance, ought not to be lost sight of, being available in meeting a great deficiency, as materials for the manufacture of paper, such as many of our very soft and spongy woods, which cannot be classed among timbers; the various and inexhaustible supply of tough withes, reeds, grasses; and, perhaps superior to all, the refuse of arrow-root, as it comes from the mill, divested of its starch; many tons of this are annually wasted, being thrown on the dunghill. The above-mentioned materials are far more likely to answer the purpose than the bamboo, so much used in China for making paper.

“I shall conclude by briefly describing another plant (the *pathos violacea*), admirably adapted for all descriptions of fine straw-plats, particularly where strength and richness of appearance are desired; its plat will be found superior to the best Leghorn plat. This plant although an epiphyte, and growing plentifully at the roots and on the tops of the highest trees, at an elevation on the mountains not under 1,000 feet, may readily be cultivated in woodlands and moist

places. The part made use of is, the petiole or footstalk of the leaf, which grows from eighteen inches to two feet long, and readily divides into strips of any dimensions, and contains a strong fibre, while the common plat made from the fan-palms does not, and seldom retains colour long. These advantages may tend to bring the plant into notice, after a while; and if, through my humble endeavours, any of the undeveloped resources of the country are brought into notice, a happy result will be effected."

The patentee having discovered that parties were infringing his patents, had the following advertisement inserted, weekly, for twelve months, in Yorkshire newspapers:—

NOTICE TO SPINNERS AND MANUFACTURERS.

Vegetable fibre, resembling silk, prepared from East and West India fibres by J. Hill Dickson's patents. Mr. Dickson begs leave to inform the Norwich, Nottingham, Leicester, Lancashire, Yorkshire, Scottish, and Irish spinners and manufacturers of wool, alpaca, mohair, silk, shoddy, and Flax, that he has secured a fifth patent for softening, bleaching, and combing the East and West India fibres, and for mixing and drawing them in the same sliver with wool, alpaca, mohair, silk, shoddy, and Flax, so as to be spun in one thread on silk, woollen, worsted, or Flax machinery.

He is prepared to supply machinery, grant licences, and send competent instructors to work the patents to any firm desirous to avail themselves of a supply of the raw material, out of which forty varieties of lustre goods have been made, consisting of velvets, plush, moreens, orleans, damasks, and other fancy figured, and plain goods—the greater portion of which has been made near Bradford during the last four months, and also at Amiens and Lyons. The patentee's price for the material has been 2s. per lb., or £224 per ton.

There are no other patents yet in existence but those of the patentee, J. H. Dickson, for preparing vegetable fibres so that they will mix, spin, and dye with animal fibre, and as he has already discovered a party in London who has been preparing India fibre by the use of one of his old patents, and sending it to Leeds, Halifax, Sowerby Bridge, and Bradford, THIS IS TO GIVE NOTICE to spinners and manufacturers, that if they purchase and mix these India fibres in a sliver or thread, with animal fibre, they are liable to an action for infringing the rights of the patentee.

Proceedings have been taken by Dickson's solicitor, Mr. A. C. Hope, against the party in London (E. Blake),* who has been preparing India fibre by Dickson's patent process, and he has been in consequence in prison and through the Insolvent Court.

A third person named Gardner started machinery in Bermondsey Street, London, to use J. Hill Dickson's patents, but at the patentee's instance, Gardner was sold up in September, 1860, and the patentee, Dickson, bought up machines, vats, and shaftings, a great bargain, and those machines were worked at Tooting, preparing material herein described; the patentee got fourteen tons of machinery and vats for £70, not the price of old iron. Few would bid at the sale, when they found all were made from my patterns.

A fourth and a more audacious (because unexpected and not thought possible) attempt at fraud, on the part of what

* This man Blake was living by infringing my patent for three years, and another foreigner named Dahman erected vats and machinery at Nye's Wharf, Old Kent Road, to follow Blake's example, having been a partner of Blake. Dahman got hold of three cotton-spinning firms in Lancashire by, what he told them, was a secret process, to work which they agreed to advance some £1,200 or £2,000, and, after considerable outlay in the erection, the Manchester gentlemen dropped in for a dead loss, all knowledge of the "grand secret" being denied them.

may be fairly called a "bubble company," was worked forward and all but successfully carried out, with unparalleled injustice and intended ruin towards the patentee. A number of cunning and crafty speculators, consisting of colonels, captains, and agents, joined to purchase the exclusive right to Dickson's patents for India for £2,000 in cash, and £8,000 in paid-up shares, in June 1859. He (Dickson) agreed to find them prepared fibres, to be spun on silk and worsted machinery, and the matter being fully understood, a company was formed, with a silk merchant or agent as managing director, styled the "East India Fibre and Oil Company, East India Chambers, Leadenhall Street." Seven directors registered their company as it appeared in the *Gazette*, as the "exclusive proprietors of Dickson's patents for India," and issued prospectuses which stated the terms; the first instalment of £500 was to be paid on the 29th December, 1859, and the next £1,500 on the 29th of January, 1860, but a week before the first £500 became due; the company of agents, colonels, and captains, thought proper to inform the patentee, they would go on and do without his patents altogether, and they issued new prospectuses, in which neither his name or patents appeared, and tried to establish a company with his prepared and spun rheea fibre for which he never received one farthing. They had managed to get solicitors to their aid, one of whom was the son of one of the most wealthy and extensive partners in a firm in Aldermanbury, City, and also managed to get his father on the direction, but as the patentee felt the injustice nothing short of a swindle, he called on the firms, and having explained the facts to the senior partners in the firm, they at once desired their names to be struck out of the prospectuses, and the patentee having succeeded there, had another great house or firm in Fore Street also informed of the intended fraud, and thus put an end to the labours of the company, and their "exclusive right to Dickson's patents for India."

The prospectuses of their company having been sent to several editors of newspapers, the following appeared on the subject :—

NEW COMPANY FOR THE SUPPLY OF EAST AND WEST
INDIAN FIBRES, FOR OUR HOME MANUFACTURERS.

“It is gratifying to observe, from last night’s *Gazette*, that a company of highly influential gentlemen and merchants, now or lately connected with our East Indian possessions, have formed themselves into a company, and have given notice of their intention to apply for a special Act of Parliament to enable them to hold lands and secure especial trading privileges in India, for the purpose of growing certain fibres, and preparing them for manufacturing purposes by patented processes, the right to which the company have secured by purchase of the inventor, Mr. J. H. Dickson, so long and favourably known to all Flax-growers and linen factors. Mr. Dickson’s patented machines, and chemical processes for rendering these fibres available, are amongst the wonderful discoveries of the age, when viewed as the results of the experimental research of a scientific mind directed to achieve a special practical benefit of a highly important nature. The importance of a very large and speedy increase of the raw material for our staple manufactures in wool, silk, cotton, Flax, and hemp, is universally admitted, the supply having now for years past fallen short of our manufacturing needs. That India has the means of supplying these growing demands of our manufacturers has been repeatedly demonstrated in these columns, the only thing wanting being the necessary capital, directed by a practical knowledge of commerce, united with a proper scientific appreciation of the qualities of our Indian plants, and the proper mode of preparing them ready for manufacturing purposes. The beautiful fibres which have been produced from the various

varieties of Flax, rhea, or Assam grass, the Neilgherry nettle, the jute, the plantain, the aloe, the Pine-apple, and many others of high value, growing in all parts of India, by the patented processes of Mr. J. Hill Dickson, have been from time to time exhibited at our scientific societies, and have been thoroughly tested by our most experienced manufacturers. The results of these experiments would justify the formation of an association with an adequate capital for supplying the wants of our trade, and we expect shortly to be able to announce the organization of a company to supply our manufacturers with a substitute for their ordinary silk, wool, Flax, and cotton materials; and everybody will watch with much interest the progress of any such undertaking.”—*Builder*.

The fact of a sale being made to the “East India Fibre Company,” became known in Bradtord by my sending to Mr. Jowit, one of the proprietors, and he noticed it as under in his journal:—

“We (*Bradford Advertiser*) have been informed that Mr. Dickson’s terms with the East India Fibre Company, in London, for the exclusive right to work his Indian patents, are £10,000, and 10s. per ton royalty on all the fibre the company prepares for market, and we are also informed that Mr. Dickson has secured additional patents for softening, bleaching, and finishing, by liquid and combing machines, and mixing the vegetable fibres of the East and West Indies and China, with animal fibres, in combing and drawing in the sliver so as to be spun into one thread, on silk or worsted wool-spinning machinery. Samples of yarn, half silk, half rhea; half wool, half rhea; half shoddy, half rhea; half alpaca, half rhea; and all rhea, are to be seen at the offices, 60, Cornhill, London.

“This fifth and new patent will prevent any company or person from mixing East or West India or China vegetable

fibres, with wool, silk, alpaca, or shoddy, unless the patentee grant a license."

Having explained the nature of my inventions and discoveries to soften and prepare the fibres of India to Colonel Abbott, whose knowledge of such production arose from twenty-six years' residence in that great empire, I was favoured by my friend with the following written document for publication.

COLONEL ABBOTT'S REPORT.

"The remarkable preparation of the rheea fibre by Mr. J. Hill Dickson's process of patent machines and liquid; the proof of its adaptability to various textile fabrics by experiments, both when used alone, or mixed with silk, alpaca, or wool, receiving the dye in the most perfect manner; and the fact that the statements made by the late Dr. J. Forbes Royle (formerly superintendent of the Hon. East India Company's Botanic Garden at Saharumpore), as to the strength, fineness, and value of the fibrous plants of India, have been proved in Bradford, by Mr. Dickson's skill in preparing rheea and other fibres for the trade of Yorkshire; these, and the following practical results, are reasons why the cultivation and collection of rheea, and similar wild plants, should be immediately proceeded with.

"At a discussion that took place in the rooms of the Society of Arts, on the 9th of May, 1860, on Indian fibres, Thomas Bazley, Esq., M.P., in the chair,—present, Colonel Sykes, M.P., Mr. Hadfield, M.P., and a large and influential audience,—The tables were covered with Mr. Dickson's raw material, prepared fine as silk, and combed on silk machinery and yarns spun from it from 70's to 180's, and forty varieties of cloth* made from like yarns were exhibited, similar in

* This cloth was made from rheea fibre, prepared by Dickson's patents and supplied by him to Mr. William Whittaker, then of the firm of Messrs. Milligan, Forbes and Co., Bradford, who had previously agreed to give the patentee, Dickson, £10,000 for his English patents as soon as he got his experiments in manufacturing the fibre into cloth fully carried out, and Dickson had the right to work his machines in a factory at Waterfall House, Lower Tooting, but not to dispose of any of the fibres in England.

appearance to alpaca, at half the price. They came up in the finish with a gloss and lustre, more like silk and wool mixed than anything else

“There is no doubt that rhea grows best in the moist lands of the tropics; and there it becomes one of the most easy, the most prolific, and the cheapest crop to which the land can be applied.

“Lower Bengal is the position which is best adapted for its propagation by European cultivation, because the land is there exactly suited for it, and it is nearest to European settlements, and the best port of shipment.

“It is for this reason, that it is considered that the Sunderbund Lands below Calcutta would be the best locality to resort to.

“There are large tracts of land there which belong to European grantees or Zemindars admirably suited to it. There are also quantities of ungranted and uncleared land, which might be had in any quantities if desired. The land selected should be at an elevation above inundation, or sufficiently drained or bunded to keep out all rise of river or sea water; subject to that, any very considerable amount of moisture would be rather favourable than otherwise to its growth.

“Looking to the circumstance that the introduction of a new article of cultivation would be taken up with hesitation, or very slowly, by cultivators, either European or native, and that they would at any rate require a large price and certain contracts to cover what they would regard as a risk, it is clearly desirable that parties here wanting this fibre should without delay proceed to cultivate it on their own account, to a certain extent, because it would ensure the speediest returns; it would act as an incentive to neighbouring land-owners, and afford a proof of the price at which it ought to be grown by others.

“As soon as the first year's crop has been obtained, there would be the proof to exhibit to a hundred Zemindars, native and European, and Indian Ryots, of what could be done, and other arrangements could be made with them to the extent desirable, to enter upon its cultivation on the most favourable terms; while it would be seen if it was preferable or not to extend its cultivation on one's own farms.

“The views of experienced persons as regards the most certain supply of rhea fibre, are, to commence at once the systematic cultivation of it in the ‘Sunderbunds,’—the flat alluvial lands forming the Delta of the mouths of the Ganges, and extending from Calcutta to the sea.

“These lands are particularly rich, a perfectly virgin soil, requiring little irrigation, and in all respects well suited for high cultivation of all kinds.

“There are millions of acres of it; considerable parts having been granted out to native and English Zemindars, who are gradually clearing the primæval forest, and then let it out for cultivation to natives. There are still, however, hundreds of thousands of acres belonging to the government, ready to be granted for a long term to any parties applying for it at a nominal rent for the first few years, and afterwards at a rent of a few shillings an acre.

“Mr. Morrell is one of the English Zemindars who, with his brothers, have been in the district for nine years, and have upwards of 100,000 acres, of which nearly 30,000 are cleared and cultivated. His experience of these lands is considerable, and quite to the purpose.

“Lieutenant-Colonel Abbott* has been in Burmah and many other parts of India, for twenty-six years, and is acquainted with several of the native languages and the

* Colonel Abbott left last month, August, 1863, for India, with a view to select rhea fibre, as well as to have it cultivated on (his friend, Mr Morrell's) Estate in India, through which a railway is laid to Calcutta.

native habits. Both of these gentlemen have, during the last few months, been considering the subject of the planting of rheea. They considered that, to get a considerable supply at an early period, it is indispensably necessary that the energy of Europeans should be directed to its planting and preparation, and that, with due activity, the desired results may easily be obtained, in the second year of the operations in whatever quantities it may (within reason) be wanted.

“The natives are so unacquainted with this plant as an article of culture, or of any large or new use to be made of it, that it would be almost a work of years to persuade them by slow degrees to take it up of themselves; while if they saw the work done under European direction, they would soon be induced to imitate it, if it was found profitable to continue its culture.

“The rheea already grows wild in all parts of the Sunderbunds, though not in large quantities; it is on the property of the Messrs. Morrell, who some years since tried the experiment of collecting and preparing it for sale.

“They soon, however, abandoned it, because they had no machinery of any kind suited to prepare it; and had to resort to the services of all the old women in the district, who did the best they could to peel off the bark with old knives, and this rude process was found in the result to be expensive and unproductive of good results; but as Mr. J. Hill Dickson, the first inventor of machinery to prepare rheea for spinning purposes, has also discovered a liquid process by which the rheea can be made as fine as silk, for which he has obtained patents for India, the Continent, Great Britain and Ireland, and forty varieties of goods have been made from it in Bradford, equal to alpaca cloth, there is every certainty of the rheea fibre becoming, like the jute, an article of most extensive importation. Mr. Dickson has been equally successful by his patented inventions in preparing the

plantain for spinning purposes; making it soft and fine as Flax at £80 to £90 per ton.

“The Messrs. Morrell, and Col. Abbott, are, however, familiar with the rhea fibre in all its details, and know exactly how it is to be grown and treated.

“The familiar example of it here is the ‘withy-bed’ for basket work; the similarity of the two plants is very great, and the mode of culture. The crop of the rhea, like that of the withy, consists of the young straight shoots which grow up after the rains.

“These grow in India about six to eight feet high, and then, unlike the withy, throw out lateral shoots, and so on in succession.

“Of course, in collecting the wild rhea, the natives get hold of what they can, and do not discriminate between old and young shoots. The old shoots are inferior in every way. The bark is tougher and coarser, and the lateral shoots springing out of the knots, interfere with getting a straight long peel of the bark from one end to the other. The proper cultivation consists of watching the growth of the young shoots, and cutting them just as they have reached a certain height, and before the root has expended all its force. By this means the fibre obtained will be found peculiar delicate and fine, more so, probably than has ever been yet introduced to this country, and a double growth is encouraged.

“Indeed, if it should be found that the shoots of, say five feet long, produce a fibre long enough, when cleaned, etc., for the manufacturer, and if the shoots are cut at that time about a foot from the root, there will be a treble crop of young shoots immediately springing up from the first stem, and three times the quantity of young shoots will be thus obtained.

“The mode of introducing the cultivation would be by collecting seeds, shoots, and roots; the plants can be raised each way, and the growth is very rapid.

“The plants should be placed at about three feet apart, or a little more to allow the spreading; and after the growing season, the whole of the superfluous shoots should be cut down to the root, so as to ensure the full strength of the roots running to young shoots the next growing time.

“This, in fact, is all the cultivation and labour the plants require; they are so hardy that neither hot nor cold, wet nor dry, much affects them; and no such culture and care as are necessarily bestowed upon sugar, rice, indigo, or other crops, need be applied to the rhee. It would be the easiest, cheapest, and least laborious crop in all India, and the natives would, perhaps, for these most enticing reasons, sooner appreciate the value of this plant than might be anticipated.

“It is clear they would give it a preference when once known, and the competition thus occasioned would gradually cheapen the production.

“One of the elements of estimating the cost of production has been derived from Mr. Morrell's knowledge of the actual expense of the cultivation by native labour of an acre of land laid down to other crops. Sugar is by far the most expensive, for it requires fresh ploughing every year, fresh planting, cleaning, etc.; yet the total cost per acre is only £6.

“The cost of the rhee would not much, if at all, exceed half of this for native labour.

“The estimate of production made by these gentlemen is a good ton per acre per annum. Dr. Watson thought two tons could be obtained. After all, it is only an estimate thus got at.

“They examined the rhee plants growing in the open air in the Botanical Gardens, Regent's Park, and found there were about twenty-seven young shoots on it of one growth. They cut some, peeled them, and weighed the skins thus obtained, and the calculation made from it was as follows:—

$\frac{1}{3}$ of an oz. avoirdupois to each stalk.

25 stalks to each plant.

4840 plants to each acre produces 1 ton 2 cwt. 25 lbs. in 2 cuttings, of 1 foot 3 inches long each.

Calculated from what was taken from the Botanical Gardens.

“There are, however, many reasons which would lead one to suppose that in India the quantity would be much greater, as the plant would be more luxuriant.

“The calculations made by the experienced persons referred to, after much consideration, result as follows:—

To produce 1,000 tons the first year.

	£	s.	d.
Clearing 6,000 Cheegahs, or 2,000 acres of jungle	1,800	0	0
Planting 2,000 acres	1,800	0	0
Cutting and carrying 1,000 tons. . .	1,800	0	0
Crushing with machinery	200	0	0
Packing, etc.	500	0	0
Carriage to Calcutta, and various incidentals to shipment	4,000	0	0
	£10,100 0 0		

Cost of production } Or £10 per ton, or $1\frac{1}{2}$ d. per lb.
the first year

To produce 2,000 tons the second year, clearing and planting done.

Cutting and carrying 2,000 tons .	3,600	0	0
Crushing with machinery, packing, etc.	1,000	0	0
Carriage to Calcutta, etc	8,000	0	0
	£13,000 0 0		
Add rent of 2,000 acres, at 9s. . .	900	0	0
	£13,900 0 0		

Cost of production } Or £7 per ton, or $1\frac{1}{2}$ d. per lb.
the second year.

“Mr. Morrell, who is here for a year or two, would be very well contented to engage at once to supply rhea on a five years' contract (and would leave for India next mail), at £25 per ton, or 2 $\frac{3}{4}$ d. per lb., delivered in London or Liverpool, engaging for the first year 2,000 tons, and afterwards any indefinite quantity.

“It is, however, candidly admitted, that for a run of five years, purchasers could grow it for much less by taking up a grant, or hiring cleared lands (and Messrs. Morrell and others are quite prepared to let it), and themselves form an establishment for planting and growing it as described.

“There seems much reason for thinking this the fact, and the more so, if there was necessity for raising a very large quantity; because one management, extending over the whole, would every year find out more and more how to economise and improve the production, reduce general charges, and ensure uniformity of quality and regularity of quantity.

“Mr. Morrell says, that the Sunderbund Lands are admirably adapted for the growth of it. If so, that position presents the advantage of being within a few hours' distance from Calcutta by the railway being now constructed through that district; and carriage to the port would be trifling, and supervision of the establishment much facilitated, by having Calcutta people at hand for the purpose.

“Whatever estimate may be formed of the quantity likely to be consumed in this country, there is little doubt that a similar amount would be required for continental countries; and thus it might approximately be arrived at, what the extent of the establishment should be, and what the capital and mode of supervision necessary.

“There seems reason to think that it should be a separate association, entirely devoted to this object; and there is quite enough for the directors of such a company to attend to.

“It does not seem probable that any more exact informa-

tion than this can be obtained, and there is nothing to lead one to suppose that any more practical means can be adopted to command a regular supply.

“Mr. A. C. Brice (St. Mary Axe), who has been up the country in India for many years’ cotton growing, says that he believes he could, with great exertion, scrape together 1,000 tons the first year,* and 5,000 tons the second year; but he has not stated the sources.

“It is certainly the fact, that nearly all the productions of India are obtained at present by encouraging the native Ryots to devote their attention to it, and making them advances. When this can be done, it is a good system, and the productions are obtained very cheaply. This plan might be usefully resorted to, even directly, but when regard is had to the natural slowness of the natives, there is reason to fear it would be a few years before a large quantity should be safely relied upon.

“An example set by very energetic work at first, would tell in an extraordinary way upon the natives, and the process employed would the sooner be imitated by them. A model plantation or farm would also present the advantage of affording an opportunity of using portions of the land for the growth of plantain, aloe, pine-apple, Neilgherry nettle, agave, and other plants giving useful fibres; and the natives will be found shrewd enough to come from a great distance,

* Mr. Brice has given a letter to the patentee, contracting to supply 700 tons within twelve months’, at £25 per ton, delivered in London or Liverpool. If the sagacious Emperor of the French could be told that there was any part of the French possessions capable of sending such material to France, at such a low figure as 2½d. per lb., would he not at once see, that France would be the first place to benefit? However, he shall know (by my sending a copy of this work), that His Majesty’s possessions in Africa can produce the rhea plant as well as India, as our government tells the operatives of Lancashire, “You may starve on, until private enterprise comes forward to obtain material in place of cotton.”

to see what could be grown so cheaply, so easily, and so profitably.

“The rhea fibre is well known to exist in large quantities in all parts of the East—Assam, Singapore, Ceylon,* Java, and China; but not being now a recognised article of export, it would be necessary to go through the very slow process of teaching the natives, step by step, that it is worth their while to cultivate it. The character of the natives there (except Chinese) is such that it would be a work of long time to get them to occupy the little time they do give to labour at all, to a new employment, to which they are not much accustomed, and the profit of which they would be slow to discover.

“No good opportunity has yet occurred for ascertaining the condition of China for exporting the China grass. This will be ascertained as soon as possible. However, Mr. Dickson, who has worked it largely, says it is not equal in quality (as to fineness) to the rhea of India.

“Inquiries are in course of being made as to supply from Java, and the result will be communicated in a few months. Mr. D. has prepared the Java rhea, and found it excellent in quality.

“Numerous Flax failures have arisen from the great deficiency in supply of that material; and Leeds, that could, in the year 1836, boast of having thirty-nine Flax-spinning

* Observing that a second company has been brought out for the purpose of growing in Ceylon an additional supply of coffee for the English market, and that their estates are not more than half occupied in growing coffee, and 10 per cent. is the largest inducement they can hold out to influence the capitalists in this country to take shares, surely, as these estates can produce an article that will meet with as ready a market as coffee in Lancashire, material, second only to silk, and gives a profit of 30 per cent. at least, they will not so far forget or overlook their own interest as to neglect, or refuse in aiding in the formation of a company to grow the rhea fibre, so ably described by Colonel Abbott, from a thorough knowledge of its value and mode of cultivation.

factories fully employed, has only now, in the year 1860, because of the high price of Flax, nine Flax factories at work. This fact was declared by Mr. Richardson, M.P. for Lisburn, as chairman at a meeting of the India Flax Company in Belfast, last month.

“The high price of Flax, silk, and wool, contrasted with that of Indian fibres, would lead to the belief that every class of spinners should feel interested in introducing these, as an additional material for our manufacturers.

“Mr. Dickson has been the first to discover that these vegetable fibres can be mixed in a sliver with animal fibres and spun and dyed equally, as if all sheep’s wool or silk goods, and for this discovery he has the exclusive patent right for Great Britain and Ireland, the Continent, India, and America.

“Dr. Forbes Royle filled, to his lamented death, the office now held by Dr. Watson in the East India House; and, in many parts of his valuable works on Indian products, bears impartial testimony to the important bearings of Mr. Dickson’s discovery, in his successful mode of treating these fibres and adapting them to the wants of our manufacturers.

“The following letters prove Dr. Royle’s opinion of Mr. Dickson’s patent method of preparing Indian fibres, and the wild rhea in particular. The extensive firm of Messrs. Marshall and Co., flax-spinners, Leeds, informed Dr. Royle, by letter, which appears in his book of Indian fibres, that the rhea he sent them was only worth £48 per ton, and only fit for making ropes. Mr. Dickson has made it as fine as silk, and sold it at £224 per ton, in Bradford, Yorkshire, in 1860, to Mr. W. Whittaker (late partner in the extensive firm of Messrs. Milligan, Forbes, and Co.), who made the forty varieties of cloth from it that were exhibited at the Society of Arts in May, 1860, and entered into a contract to give £10,000 for the English patent, and paid on account £850 to Mr. Dickson.”

Mr. Whittaker from an unfortunate accident, (a broken leg), got embarrassed and his private affairs got into the bankruptcy court; if such misfortune had not reached him, I am quite convinced he would have fulfilled his promise of purchase, and have worked my patents with success, as he spared no expense in proving their value; he forfeited by his bankruptcy all interest and right of purchase of my patents.

As the delay in having my inventions, (so likely, if worked, to be of great benefit) remaining idle, has caused many to question the cause, I beg to here add a statement of facts that I hope will serve to convince those who may feel interested, of the real cause.

When Mr. Whittaker suspended payment in 1861, offers were made me by several firms in Bradford, to take his place as purchasers of my patents, and such was from six of the most extensive spinning and manufacturing firms in the town, who all got of my prepared rheea fibre and had it spun and woven into the yarn and cloth now in my pattern books. The price, £10,000, was never objected to, but the uncertainty of a supply, India being at such a distance, and then considered the only place from which rheea fibre could be had, such was the great obstacle and objection which nothing could remove but the establishment of a joint stock company in India, or an arrangement with first class firms in Calcutta, Madras, Kurrachee, and Bombay, who would guarantee the first and most important part, the growth and supply from that great empire. Such has been a complete stopper on the disposal and working of my patented inventions until now, when I expect that with such facts and figures I must obtain the aid of British merchants. Since then I have referred back to letters I was favoured with, from Sir W. Hooker, of the Royal Gardens, Kew, to whom I am deeply indebted, as through his kind attention I have been furnished with evidence beyond all doubt in the writings of Mr. Nathanel Wilson, on the vegetable production, especially the fibres of

Jamaica, and as that Island abounds with rhea and similar fibre plants, and as the distance is comparatively short to that of India, my hopes of a supply through merchants connected with and interested in the trade of that country, are likely to be now realised. Then I have discovered that Algiers is second to none for fibre plants, and the strength of those I have experimented upon are of such a superior nature, that once their value be made known and brought properly before his Majesty the Emperor of the French, the resources of that country will not remain undeveloped, and rhea, no doubt, is to be had in that region. We have also New Zealand, with a climate for everything that India or Europe can produce, and I have been able to cottonize the Flax (*Phormium Tenax*) of that country.

And last though not least, we have Ceylon, only a four months' journey from home, and merchants trading to that country who have the power and inclination to enter into engagements as to a supply of rhea and such fibres as the soil of that rich productive island can be made to produce for our wants in Lancashire.

“ ‘East India House, 28th February, 1854.’

“ ‘SIR,—Mr. Sangster and I propose coming down to see your mill one of these days. I will give you intimation of our intended visit. I have no doubt that the present aspect of affairs will make merchants pay more attention to India fibres, of which there is great abundance; orders have gone out for several of them.

“ ‘Yours obediently,

“ ‘J. F. ROYLE.

“ ‘Mr. J. Hill Dickson,

“ ‘Proprietor, Flax Mills, Deptford.’

“ ‘SIR,—I did not reply to your note, as I concluded that you would let me know when your mill is ready for inspection. I am anxious to see some Flax separated from the plant by

your process. I should like also to bring a piece of the India plant which yields such strong fibre. I have a plant growing and could cut off one stalk, if that would be of any use. I am going to publish a pamphlet giving an account of the Indian fibres. I should like to say something about your process.

“ ‘Yours obediently,

“ ‘J. F. ROYLE.

“ ‘Mr. J. Hill Dickson,

“ ‘Proprietor, Flax Works, Grove Street, Deptford.’

“ ‘East India House, Dec. 7th, 1854.

“ ‘Dr. Royle presents his compliments to Mr. Dickson, and regrets that he has been unable to visit his works, and would like to know if any coming day would suit for his coming down.

“ ‘As Dr. R. is just going to publish his work on fibres, he has an opportunity of mentioning it, and if, in his work, Mr. Dickson will give him a short description of it, Dr. R. would insert it. There is, of course, a description published among the patents, but Dr. R. would only notice the general principles, if Mr. D. had no objection.

“ ‘Advantage of J. Hill Dickson’s inventions in preparing East India hemp and Flax, Italian hemp and New Zealand Flax, as substitutes for Irish, English, and Foreign Flax.

“ ‘The extensive firm of Messrs. Hives and Atkinson sent the following note to Mr. Dickson, in reply to an inquiry respecting the useful qualities of Indian Flax yarn, the fibre of which had been prepared with his valuable patent liquid:—

“ ‘Bank Mill, Leeds, Oct. 4th, 1858.

“ ‘MR. DICKSON, SIR,—We think the hank of Indian Flax yarn is in as good a state for weaving as if it were boiled. We have no machinery suitable for the silk, and think you would be more likely to obtain what you want of a silk-

spinner, like Messrs. Holdforth. We shall be glad to see your samples of fibres at £15, £18, £35, and £49 per ton, and will spin it for you, if our machinery be suitable.

“ ‘Yours obediently,

“ ‘HIVES & ATKINSON.’ ”

“ ‘The following letter from Messrs. Benyon and Co., of Leeds, will testify as to the strength of the rhea:—

“ ‘Leeds, July 5th, 1858.

“ ‘DEAR SIR,—I have your letter of to-day, and in reply beg to inform you that I have got the stuff, the Indian rhea fibre, spun for you, which I now send. It was so strong,* it could not do well on such frames as ours.

“ ‘I am, Dear Sir, yours truly,

“ ‘For Benyon and Co.,

“ ‘W. COULTON.

“ ‘Mr. J. Hill Dickson.’ ”

“ ‘Leeds, Sept. 27th, 1860.

“ ‘SIR,—We have examined the samples of prepared fibre you have shown us this day, and are of opinion that the best and finest of them are well suited to the trade, provided on trial they are found to stand the necessary process of spinning as well as Flax prepared in the usual method.†

“ ‘We also think that if this should be found to be the case, the price of from £60 to £70 per ton, in the dressed state and ready for use, is not above the market value.

“ ‘We are, sir, yours, etc.,

“ ‘BENYON AND CO.

“ ‘Mr. J. H. Dickson.’ ”

* What a fault compared with the rotten jute of India.

† The material approved of by Messrs. Benyon and Co., at £60 or £70 per ton, was New Zealand Flax and Italian hemp, prepared by Dickson's patents.

The patentee having been so successful in his taking off the rehea fibre, from the wood or rod on which it is produced, by machinery, compared our home-grown willows with it, and finding them similar in appearance, he has been equally successful in producing from the willow plant an excellent article for paper, which he intends including in a new patent he is about to take out for the machine he prepared the willow fibre in.

FIBRES PREPARED AS SUBSTITUTES FOR FLAX,
BY J. HILL DICKSON'S PATENTS, IN 1862-3.

AND ORDERS OBTAINED FOR THE SAME AS A TRIAL,
BY THE FOLLOWING SPINNERS :

No.		Long Fibre.	Tow.
1	Messrs. Marshall & Co., Leeds	£70 per ton	
1	„ Hives & Atkinson	do. £70 „	
1	„ Benyon & Co.	do. £70 „	
2 & 1	„ Wilkinson,	do. £60 and £70.	£30 and £36.
2	„ Briggs & Son	do.	£30
2 & 1	„ W. Hill & Son	do. £60 and £70.	£30 and £36.
2	„ Patterson & Co.	do.	£30
No. 1 is taken from Italian hemp, green, unretted, and cost the patentee £25 per ton, and £10 per ton to prepare by liquid and machines, in all			
			£35
No. 2 is taken from New Zealand Flax, and cost £20 per ton in London and £10 per ton to prepare by liquid and machinery, in all			
			£30

From the price the above has been sold at, the shorts, or noils, that cannot be spun, can be sold for paper-making, at the following low prices, and leave a fair profit, viz. :

	£	s.	d.	
1½d. per lb., or	14	0	0	per ton.
1¾d. „ „	16	0	0	„
2d. „ „	18	18	0	„
2¼d. „ „	21	0	0	„
2½d. „ „	23	6	8	„
2¾d. „ „	25	14	0	„
3d. „ „	28	0	0	„

The last two are from rhea waste, and I have had bank-note paper made from it, of first-rate quality.

But one of the above-named spinners could tell that the material was Flax, although it was the reverse in feeling. Had it been known to be, in reality, what it was, such a price would not have been offered.

NEW MATERIAL FOR COTTON SPINNERS, NOT HALF THE PRICE OF COTTON.

J. HILL DICKSON'S PATENT COTTONIZED FLAX, HEMP,
RHEEA, AND NEW ZEALAND FLAX.

WILL FLAX-GROWING PAY FARMERS, TO SELL WHEN SCUTCHED
AT 6D. PER LB. OR £56 PER TON, AND CAN IT BE PRE-
PARED FINE, SOFT, AND SHORT, TO BE SPUN ON COTTON-SPINNING
MACHINERY ?

From the "Armagh Guardian," Friday, February 19th, 1864.

"DEAR SIR,—The above-described question is, (in my humble opinion) one of great national importance, not only as to a supply of material for our manufacturers, but also the farming interests, especially at this time of year when the plough should turn down the barley or wheat stubble, with a view to another ploughing by the end of March to prepare for growing Flax. At no time for the last half century, has the subject become worthy of so much consideration as at this moment, not only because of the great prosperity of the linen trade of one province, Ulster, in Ireland, but because this crisis, when Surat cotton is now being sold in Liverpool at from 1s. 5d. per lb. up to 2s. per lb., that would scarcely find a buyer at 4d. to 5d. per lb. two years ago, and because, if we are not able to find or obtain material that will be a substitute for cotton, we should not lose sight of such a want, or allow an opportunity to pass without trying to produce some material that it may be possible to convert into fibre sufficiently soft and fine, and capable of being made sufficiently short by

machinery, to be spun on cotton machinery, and as by such production, if successful, we not only create employment that must lead to be permanent for the thousands that are now in distress in Lancashire, but we introduce new and additional material for the clothing of our people, that were formerly depending on the Southern States of America; should we not seize on this auspicious moment of proving by our own immediate action, that the manufacturing industry of Lancashire will no longer be depending on material coming from a country, whose people, from misunderstanding created between themselves, revenge their misfortunes and blood-letting propensities on our trade and our well-conducted operatives, by burning the material, cotton, rather than we should have it, because we very wisely refused to join either disputants, in an unholy, unchristian, and barbarous war.

If the reader has any desire to understand what is the real advantage of a country producing from its own soil material for its manufacturers, in preference to sending away our gold in millions for cotton, I beg to submit for perusal the following facts and proofs that I hope may be found deserving of notice:—

In *The Times*, about two months ago, it was reported that there was produced last year in Ulster four millions worth of Flax, by a population of two millions. Now, it must be observed, that in place of Flax, £4,000,000 had been produced from 61,400 acres of wheat, barley, or oats, the whole, in all probability, would have been shipped to England for that amount in gold; but no, the home produce Flax remained to give employment to other classes than farmers, in the happy and industrious community of Ulster; and it must be evident to farmers, that by producing that four millions worth of Flax to be worked up by their spinning and manufacturing neighbours, that they are not only better paid in the first instance, than if they had grown a crop of grain, but that

they are paid indirectly the year round, an additional price for every other article produced and sold off their farms by their neighbours, whose spindles and looms engaged on such Flax gives constant employment to the consumers of farm production.

“As I look upon this part of the subject as being one of great national importance, as my countyman Swift says in his writings, I consider his remarks are at this moment deserving of being again in print.

“Swift said—“The first cause of a kingdom’s thriving is the fruitfulness of the soil to produce the necessities and conveniences of life, not only sufficient for the inhabitants, but for exportation into other countries.

“The second, is the history of the people in working up all the native commodities to the last degree of manufacturers.

“The third is a disposition on the part of a country, to wear their own produce and manufactures, and import as little in clothes, furniture, food, or drink, as they possibly can live conveniently without.”

“Such was the teaching of one of the greatest and wisest men, and truest patriots known to modern history, just as if he had anticipated the American war, that has placed Lancashire cotton-spinners the reverse of being in a “bright” position, from their depending chiefly on the slave-grown cotton of America. Had the *witty Quaker* M.P. got a lesson in early life on patriotic independence, from such a teacher as Swift, he would have thought more on Flax and sheep’s wool than he did when he recommended the substitute of thatch and blue paint, as the alternative of the paste and gypsum cotton rags of Lancashire, and overlooking as he did the value of the fine cambric and linen cloth of Irish manufacture, as if all mankind had gone naked until within the last forty or fifty years; but his selfishness made him forget that. The efficacious agency of the “hand

spinning-wheel" clothed our people for centuries, before the self-acting mules were thought of in Manchester, and the mulé-like obstinate temper and practice of cotton spinners in drawing their greatest supply from one country and overlooking our Indian empire and colonies, has caused an unexpected and "a heavy blow and great discouragement" to the trade of Lancashire, where the peaceable and praiseworthy operatives, are still suffering in thousands. However, as their brethren in the spinning trade of Flax in Ulster have wisely kept in view the teachings of "Swift," and pulled in harmony with the landowners and farmers in that happy and prosperous province, the trade of which, as reported at the close of the year, has never been so flourishing, let us more seriously consider from such facts, and the wisdom of Swift, so thoroughly proved, whether we should not at once commence the work of producing from our own soil at home, as much as is in our own power, of Flax, as in my humble opinion, it is contributing to the misery of the operatives of Lancashire to continue importing cotton at such outrageously high prices, from a country whose ports are shut against us, to the ruin of factory owners as well as their working people; for as I am prepared to show, the owners of the twenty-two cotton mills that are closed in Preston,—which deprives 10,800 operatives from work, that Flax can be had in thousands of tons and prepared sufficiently soft and fine, and made the proper length for the existing cotton-spinning machinery, without alterations, but that of a trifling nature as to expense; the fault will be their own if material from 6d. to 9d. per lb. will not stir them up to more patriotic feeling.

"As there has always been a prejudice against the introduction of new material, lest alterations in machinery may be required; and alpaca, which is now a great trade, shared the prejudice until the fortunate Mr. Salt worked it successfully,

I will on this part of the subject add what will, as proof, be interesting. On my visit to the north, in July 1862, I had the honour of having an invitation to call, and had the expressed opinion of one of the most enterprising, extensive, and wealthy merchants in Lancashire, Sir William Brown, Bart., Liverpool, in favour of my views and exertions, to introduce into the industry of that district, other material than cotton; and his name in my opinion is sufficient to give weight and importance to such an object. Having sent on to the offices of Messrs. Brown, Shipley & Co., a book with my specimens, containing rhea, hemp, Flax, pine-apple, New Zealand Flax, plantain and other fibres, the first six of which I had made by machinery and liquid, as fine and soft as cotton, and adapted as to length, sufficiently short in-staple for cotton-spinners' purposes, and in the book, yarns and cloth, spun on silk, worsted and Flax machinery, and having also the first sample of rhea spun on cotton machinery by the Messrs. J. Crossley and Son, Halifax, I told Sir William I was invited by the Messrs. Birley, Brothers, cotton-spinners, to Preston, (for whom I was agent for many years in Belfast) to try my material at their cotton factory, confident of being successful. His reply was that he had heard that the cotton spinners in the United States of America were quite successful in spinning the wild Flax of the prairies on their cotton machinery, and added, if I succeeded in having my rhea fibre spun on cotton machinery, I should lay a foundation (by the introduction of such material) which must revolutionize the entire trade of Lancashire. He also said I might make use of his name by such expressed opinion, if it would aid my object of getting directors to join a company to work my patented inventions, as owing to his advanced age, and having retired from business, he could not do more than answer letters, which he would gladly do in my favour, and wished me every success.

“Such are (as near as I can recollect) the words expressed by one of England’s most successful American merchants, who will, when called off to a better world, leave to the rising generation in Liverpool a monument, second only to that of Sir Christopher Wren, but more praiseworthy, because it was a free gift to his fellow townsmen, where he realised his great fortune, and now lives to a good old age to enjoy the pleasure of having evidence of the good he has bestowed on those who remain behind.

“Now as rhea runs from $3\frac{1}{2}$ to 5 feet in length, being in fact double the length of ordinary Flax ; it must be evident to any spinner of Flax or cotton, that if it can be so worked short, by machinery, as to spin on cotton spinning frames, that Flax which is of a more soft and oily nature, cannot be less adapted than rhea fibre material that is of a dry and brittle nature, but for the oily solution I use in preparing it ; with such facts as these, as proof, that the Flax-growers of Ulster have a new field before them, in addition to the Belfast factory-owner’s attendance, each Tuesday to clean out your markets ; I hope they will not sit down with folded arms and allow their Flax-trade (as my old schoolfellows did from the peace in 1815 to 1830, look on with indifference until Belfast took away their linen-trade) to be stolen away to supply the trade of Lancashire, either by English farmers, or their own Southern neighbours ; for although it is an old saying that “opposition is the life of trade,” I cannot see that the Ulster farmers have got any rise in their price of Flax during the great and prosperous year of 1863 ; for looking as I do at your market-note, 5s. 9d. to 8s. 9d. per stone, as being below what I paid in Armagh some 20 years ago, when my purchases were generally up to £1,000 on each market day, I do think a little opposition to the Belfast gentlemen towards a supply of *cottonized Flax* for Lancashire, will do no harm to either producer or spinner of the raw material.

“ As this subject of cottonizing Flax may be ridiculed as a *Claussen delusion*, inasmuch as it was then said of Claussen's patent “ that it was little short of turning gold into silver,” Flax being then an average of 7d. per lb., while cotton was then only on an average of 5d. per lb.; a few remarks on this may deserve attention. Claussen's patent was for liquid only, a chemical compound for what he termed “splitting and bleaching;” not only was it expensive, but dangerous in the method of operating, as if great care was not taken in the washing out of the alkalies used, the material was liable to heat and total destruction; ensued and added to this drawback, he had no machinery to reduce the fibres of Flax to the proper length; for, being spun on cotton machinery, without which, it was a matter of impossibility to spin such prepared material on cotton spinning frames, besides the cost of preparing brought the material up to 1s. per lb., and out of the reach of cotton spinners. Now matters are different: it is a well ascertained fact, by calculations made by the cotton supply association at Manchester, that if the American war had ceased at this moment, and slavery had been so crushed, that it is impossible to see for the next five years a regular supply of cotton at a price below 1s. per lb. in England.

“ With such a report of unexpected advantages arising from the Americans not being blessed by having a similar constitution as our own—a fact that has led to a savage war—before the eyes of the landowners of Great Britain and Ireland, who have the power, if properly exercised, to cause a supply of better material than cotton to the mill-owners in Lancashire, at less than half the price, where millions of their gold remains locked up in machinery and buildings, all standing idle, whilst their operatives starve, need I say when they are all so well aware of the advantages they have already gained, by the production of Flax by their tenants to supply Belfast spinners, that now is the time to show such Lancashire

millowners, as John Bright, M.P., and R. Cobden, M.P., (whose revolutionary spirit and unjustifiable teaching, with a desire to dividing their estates into cabbage gardens, such being with a view to gain a mob popularity that even the *Times* has been obliged to condemn) that notwithstanding such conduct, the true meaning of Conservatism is not to be departed from, but the truly good old policy of Swift strictly adhered to, as the only true mode of consolidating the thriving interests of all classes of her Majesty's loyal subjects in Great Britain and Ireland. Trusting that you will, as usual, give space in your journal to the above observations until I send on what will, I am confident, be more directly interesting to my old city friends,

“I am, my dear sir, yours truly,

“J. HILL DICKSON.”

P.S. Having sent to Lord Palmerston, Sir C. Wood, and Mr. Gladstone specimens of rheea, Flax, and hemp, cottonized and spun yarn from it, on cotton machinery, and cloth, superior to cotton cloth, at half the price, with my views on the permanent good that would result by the introduction of such new material into Lancashire, and having asked the Government to countenance my ideas of a free grant of land in India to London merchants as a company, to induce them to cultivate and gather such fibres, I sent the note I had from the late Sir William Brown to Earl Russell, expecting that the opinion so favourably expressed by a merchant of such eminence, would be deserving of a favourable reply; but no, my Lord Russell, I suppose, has no faith in Irish doctors, but like Mr. Gladstone, in Garibaldi's case, prefers English—a “Ferguson” to a Dickson.—J.H.D.

BANQUET TO THE LORD LIEUTENANT IN IRELAND
26th NOVEMBER, 1864.

As we have before us in our daily papers the truly described life-movements of our greatest (self-taught) men, movements made from a determination to conquer every difficulty, and by which they have been raised from poverty to affluence, as in many instances, one particular object takes hold on the mind of inventive genius and his name becomes so associated that it is at last called his "hobby," and I fear it too often follows that those who call it so, may be so uncharitable as to suppose that there is a hollowness for a selfish purpose, I as one who have written for the last nineteen years as a hobby on Flax-culture, and above all the benefit of the power loom, could not but feel delighted to see, that scarcely had Lord Wodehouse got seated as Lord Lieutenant of Ireland, in the Castle of Dublin, until he, at the first entertainment given by the Lord Mayor and citizens of Dublin, told them at that dinner what I told them thirteen years ago through the press of Ulster, that the power looms, the machines that I was the first man to perfect and introduce into Belfast in 1838, are now the only hope for Ireland's regeneration, the only means whereby the wages of the labourer, 8d. per day, can be advanced to a comparison with this great, justice-loving country, where no man is expected to exist on such scanty, miserable, and unjust wages. I, feeling the honour of such an advocate of my views, in the person of the Viceroy, addressed his Excellency with such evidence by my published letters in the *Banner of Ulster* as I thought could not fail to show him that my unpaid labours through the press (thirteen years ago) deserved his consideration, and as I saw in the *London Telegraph* on the 26th November, 1864, that his

Excellency had so thoroughly expressed my sentiments on the power looms and the advantages that the spread of its working would give, if introduced into the south and west of Ireland, I could not do otherwise but again mount my hobby horse however inanimate it has been for thirteen years, when I found that the representative of the most beloved sovereign that ever sat on the British throne, had proved himself capable of telling the citizens of Dublin what I told them through the press, that as the power loom had made Lancashire the mistress of the world in manufactures, Ireland's hope must depend on the amalgamation of the two interests of agriculture and manufacture, and on this his Excellency said:—"There is another subject which I concur with the Lord Mayor in thinking is one of deep interest to this country. I mean the progress of manufactures. (Hear, hear.) A country which depends only on agriculture will always have great difficulties to contend with. It is of the utmost importance to this country that you should be establishing and promoting manufactures, have something to fall back upon in periods of distress, so that you will have some means, as my right hon. friend on my right said on another occasion, of employing your agriculturist population, and of taking them from agriculture where they do not receive wages as high as you would wish them to receive, and employing them where they would receive better wages."

Now this is very excellent advice of his Excellency the Lord Lieutenant, but there is too much of the quaker or methodist sympathy of "be ye clothed and be ye warm," in such advice, to gain for him a feeling of thorough confidence, and that he has gone over to support or promote such an object so essential to Ireland as a spread of manufactures.

Had his Excellency taken advantage of his position, and said, I am sent over not only to tell you what I have read of Ulster and its great linen trade, but I am here with a desire

to promote meetings, (not such as was held in the Rotunda round room, to give rise to a challenge between two of Lord Palmerston's staunch supporters, Sir R. P. and the O'C. D.), that will by my name and my purse elevate the working men from 8d. to 2s. per day; then indeed would Lord Wodehouse have shown he had seriously considered Ireland's wants, and to this he should have told his hearers, I am here to advise, by a properly organized system of loan through our government, the means to promote manufactures in Ireland, as I know by history of the millions of acres of unreclaimed land, that you have "virgin" soil, the best of land for growing Flax, an article you can now produce and force into the Lancashire market in place of cotton, such would have given his lordship's cut and dry remarks, on the one, prosperous trade of Ireland, a feeling of earnestness in the eyes of the people of Dublin, and caused some of them to visit Belfast, to see if there was not as warm hearts in the black north towards the well-doing of our common country as there is in the heart of their city, and far superior to the round room *treasonable spouters*, that never have shown a disposition to start anything that will elevate, by "a fair day's wages for a fair day's work," the poor honest labourer.

His Excellency told the Lord Mayor and the Dublin merchants that were invited to meet him, no more than they all knew before he went over, and called their attention to the prosperity of Ulster, by saying:—"Let us consider for a moment what Ireland has been doing with regard to manufactures. This is, perhaps, the point in which I may most justly congratulate you. You have one great staple manufacture in this country—your linen manufacture. Now, what has been done in the last few years as regards that manufacture? We should test the progress of a manufacture by the number of factories and power-looms, because manufacturing industry in these days depends essen-

tially on the power-loom. (Hear, hear.) In my country it so happens that we depended upon the hand-loom, and we were beaten in the race; and, although by great exertion we have kept our heads in some respects above water, yet the power-loom has, practically speaking, won the race. What has been done in Belfast? In this very year there has been an increase—I speak from memory, and in round numbers—from 3,200 to something like 7,500. It is asserted that at the present time there may probably be not less than 10,000 power-looms at work. Now, there is a solid foundation for your principal manufacture—a solid foundation which, I am sure is so firmly built, that if it should so happen, as I pray God the day may soon come when that terrible war in the United States, or what was once the United States, should come to an end, and that cotton should again pour into England at the low rate as before; so solid, I say, is the base upon which that already great industry of Belfast is established, that even in that case the ground you have gained will not be lost.”

If his Excellency thought that such would be refreshing news for the people of Belfast, he made a sad mistake, to suppose them so stupid as not to know the position they have gained, but on my reading the above speech, I thought myself justified in trying how far Lord Wodehouse would be disposed to encourage the free circulation of my Third Edition, or book of instruction on the cultivation of Flax, and the spinning and weaving, patronised as it was from the first by the late Prince Consort, several noblemen and members of Parliament, and all the leading Flax-spinning firms in Yorkshire and Lancashire, and I addressed his Excellency as follows :

“117, Great Dover Road, London,

“December 6th, 1864.

“To His Excellency Lord Wodehouse,

“Lord-Lieutenant of Ireland.

“MY LORD,—Permit me most respectfully to solicit your Excellency's attention to the fact that I find, on comparing your speech at the Lord Mayor of Dublin's entertainment with my writings for the last twenty-six years on the subject of Ireland's wants, and the basis on which the extension of the linen-trade of Ulster to the other three provinces would permanently elevate the labouring population, I could not but feel disposed to believe, when your Excellency touched on the ‘power-loom’ as Ireland's hope for the further security and extension of her great staple, the linen-trade, but that you may have placed your hands on some of my writings on the subject, for, as like Watt and the steam-engine, I was the first man to introduce a power-loom into Belfast, and to bring into it, from Leeds, a perfect piece or web of linen, I never did despair of the day being not far distant when the novelty I introduced would become, as it has been in Manchester, the chief corner-stone of every factory in the United Kingdom. I could not but feel proud to see that no sooner had your Excellency the opportunity of making a speech in Dublin, but you told them of the advantage of the power-loom.

“I will not attempt to trespass on your excellency's attention, or dilate on the advantage or value of the power-loom now, at the end of twenty-six years, since I brought the first from Leeds, made by Mr. R. Busk, and improved under my own superintendence until a perfect piece of cloth was made; but as I have written on the subject, and in a few days my Third Edition will be before the public, and I must hope my practical instructions will stand criticism, so far as my remarks will serve the cause I advocate, and I trust that the plain statement set forth, which cannot be expected to have much,

if any literary merit, may serve so far as to be sufficient to deserve your Excellency's order for its perusal, and as I am to deliver to the India Office 198 copies for free circulation in India, for which I am to be paid £66 towards the expense of printing (for which I have already paid £143), I hope that my offer to place at your Excellency's disposal in Ireland 400 copies for the same amount, £66, in order that they may get ventilation, through your Excellency's orders, into the south and west of Ireland, may meet your Excellency's prompt order to my publisher to have them sent forward to the Castle in Dublin.

Your Excellency will, no doubt, by this time be aware, that instructions on the Flax question are wanted in the south and west of Ireland; my book contains the Belgian system, and the best method in Ulster preparing, also my improved patent method of cottonizing Flax and all such fibres, and on the merits alone do I depend, and as the testimonials as to the quantity in the work I have produced are set forth in my book, I can only say, if your Excellency desires a trial to be made in this particular, your orders shall have prompt attention as soon as I have my last improved machine ready for work. Trusting your Excellency will excuse this liberty.

"I have the honour to be, etc.,

"J. H. DICKSON."

I did hope, when I wrote the above offer to the Lord Lieutenant, that my work would deserve notice, but my Third Edition had no patron; my first was the Duke of Richmond, my second the noble Earl of Derby, and the third wanted the name of (I supposed) the Premier, who sent Lord Wodehouse to Ireland, therefore I received the following reply.

"Viceregal Lodge, Dublin, December 12th, 1864.
SIR,—I am directed by the Lord-Lieutenant to acknowledge your letter of the 6th instant, and the sheets of your

forthcoming work, which you were good enough to forward to his Excellency, and I am to state in reply that, though his Excellency is convinced of the value of your work, he regrets that he is not in a position to promote its free circulation in Ireland.

"I am directed to return the sheets of your work, and the enclosures of your letter.

"I am, sir, your obedient servant,
(Signed.) "EDMOND R. WODEHOUSE.

"J. H. Dickson, Esq."

What a mistake it has been on the part of Lord Palmerston that he did not select a viceroy for Ireland, out of the many rich of his noble acquaintances, one that had the means, as well as the eye, understanding and heart, to see and promote what would create permanent employment for the people. We have here before us a letter by order of our Queen's representative in Ireland, saying "that though he is convinced of the value of a work calculated to promote what he recommends the people of Ireland to push forward, as the only hope of national prosperity," he regrets he is not in a "position to promote its free circulation," not in a position to pay £66—barely the price of printing and binding; had Lord Palmerston, if he could not get another Duke of Northumberland to make Dublin merry at Christmas, selected Mr. Ben Lee Guinness, a merchant prince in Dublin, or some of the merchant princes in this city, like Sir J. Duke, or the late Mr. W. Cubitt, to whom £20,000, in one year, as lord mayor, was no object, no branch of trade, so essential to the well doing of Ireland would stand still from want of support necessary for its extension; but so long as men like Sir Robert Peel have a voice in the Castle of Dublin, in the great work of extending Flax culture and the power loom in Ireland, in opposition to Lancashire cotton,

men whose fortunes and position have been created by cotton-spinning and weaving, it is against all reason and common sense to expect Ireland to have any assistance from a government having such a chief secretary. I can prove this by his promises to deputations, and by his refusal to open my pattern book containing cottonized Flax and Indian fibres, yarns and cloth, which lay a whole week at the Irish office, Westminster, and my letter requesting him (Sir R. Peel) to have all sent on to Dublin; the same book that the noble Earl of Derby sent from Knowsley Park, to the Manchester Relief Committee.

APPENDIX.

The greatest difficulty in the endeavour to induce farmers to grow Flax, is to disabuse their minds of the idea so mischievously promoted that this plant is necessarily so great an exhauster of the soil over all other crops, that it should not be cultivated, or if so, it should be sparingly; and the misfortune is that editors or paid writers of the press are generally of the briefless barrister class, scholars no doubt, but to earn a living, will take upon themselves to write an article on any subject, and I have had above thirty years practical knowledge in the cultivation of Flax and have never allowed a book written on this subject to remain unread that I could place my hand on, or an article in the newspaper that I could pass without reading, I must here say that in all my experience I have never read anything so monstrously absurd, and without any foundation, in fact, as the article now before me, taken from a leading journal, the *London Standard*, a paper that one would suppose should, and in fact always did appear to be until this article appeared, the true friend to the Irish landlord. Having noticed the article at page 161 in this work, where the writer says, "The prosperity of the north of Ireland may be very justly attributed to the flourishing condition of its linen trade," and having also shown by his assertion, "That the linen trade of Ulster cannot be largely increased because the produce of its looms is only suitable to the wealthy," that he is so perfectly ignorant of the subject he has attempted to write on, that he has subjected himself to be laughed at by every Flax-grower, spinner, and manufacturer of linens in Ireland, I left his remarks on the exhausting nature of the Flax plant, to be answered by what science teaches along with practical working of the soil, all of which has been tested by the most able writer of the day, Sir Robert Kane, to whose works I shall draw on, as I have done largely, because it is the standard work on the resources of Ireland.

That Flax is an exhauster of the soil (I say may be so, if carelessly cultivated), cannot be disputed; and so will all crops

be, but that it must be so, however cultivated, I utterly deny; and I do so on two grounds: 1st., on the ground of my own experience, having grown as good oats after Flax as after wheat, or any other crop; and 2nd. on the ground of the known composition of the plant, I say "known," as Sir R. Kane, in his masterly writings has given us in full detail, all the information that could be wished for, and as the entire press of Ireland is aware of the thorough value of Sir R. Kane's knowledge, I cannot but think they felt dissatisfied when they read the silly attempt of the writer in the *Standard* to discourage the Flax movement in Ireland.

The main point upon which we rest our assertion that Flax is not necessarily an exhaustor of the soil, as the word implies, is the removal out of it, those elements of vegetable food which it contains, and in the abundance of which its fertility consists. Now, plants derive all their mineral portions from the soil, all those portions, in fact, of which, when they are burnt, their ashes consist, and upon the quantity and quality of their power of exhausting, the soil depends.

Taking the Flax plant when harvested, Sir R. Kane found it contain 5 per cent. ashes, which, comparing the plant need not be carried off the farm. The fact is nothing but the Flax should be carried off the farm; the seed should be consumed upon it, the steeping water should be used as liquid manure, and none better can be applied; the bone or stalk on which the fibre grew, when separated from the Flax, by breaking and scutching should be burned, as it will not rot for years, and carried to the dung heap. The fibre is the only thing carried to market, and the point to be ascertained, by one who cultivates as he ought, in order to make up his mind as to the exhaustion of his farm, consequent on its cultivation, is the mineral matter carried off in the fibre; and this, on Sir R. Kane's authority, and for the satisfaction of all who cultivate the crop, we proclaim to be most insignificant in quantity; in fact, you may take a bundle of Flax fibre and burn it, and it will leave no ashes.

Any further remarks would but weaken the influence of this fact, I therefore appeal to my intelligent agricultural readers, if what I have said does not entirely meet all the objections on the part of the *Standard's* writer, he can bring forward. What becomes after this, of his and such theoretical writers, antiquated, and (can I help saying) most ignorant fear of landowners allowing their land to be ruined, now, that it is so evident that Ulster prosperity has

been solely created by Flax cultivation, I am sure that a landowner can do few greater favours than encourage and aid, if necessary, an intelligent tenant to grow the crop, which being proved non-injurious to the land, must be for his own benefit and that of Ireland.

I have in my work quoted so frequently from Sir R. Kane's able work on the resources of Ireland, and his speeches at the agricultural meetings, and also from Dr. Hodges, of Belfast, a gentleman that also thoroughly understands the Flax subject, that more would be superfluous, therefore, I leave the *Standard's* writer to grope his way out of the dark cellar he has dropped into until I kindle a bundle of Flax, that by such flame he may see his way out, and if he should touch on this subject again, I must ask him how it is he forgot his writings in 1850, when he was stirring up all Ireland to imitate the teaching of Swift, on the thriving of a country to produce material for export when manufactured, and import nothing they could possibly avoid for the purposes of meat, drink, furniture, or clothes; but I have not done with the writer, he shall hear from me on Swift's teaching.

If anything could be more brought out in favour of the increase of Flax-culture in Ireland, it can be supplied by the speech of the new Lord-Lieutenant on the increase of the power-looms in Ireland, and that such should now be Ireland's hope to give employment to her people; and as I was the first man in Ireland, in the year 1838, to superintend the improvements of a power-loom in Leeds, until I had the first linen-web ever made by power finished, and brought it and the loom to Belfast, previous to which there were hundreds of silly fellows, like the writer in the *Standard*, thought me mad, as it was said to be impossible to weave linen by power, because "a good selvage could not be possibly made," and "Flax yarn had no elasticity like cotton or woollen yarn." I refer the reader now with great satisfaction to my letters in this book as proof of the fact, one in particular, published in the Belfast *Banner of Ulster*, in the year 1856.

LIST OF SUBSCRIBERS

TO THE AUTHOR'S FIRST WORK ON THE

CULTIVATION AND PREPARATION OF FLAX-SPINNING AND WEAVING.

PATRONISED BY THE LATE AND MUCH LAMENTED
PRINCE CONSORT,

AND

SEVERAL NOBLEMEN, MERCHANTS, MEMBERS OF
PARLIAMENT, SPINNERS AND MANUFACTURERS,
IN 1847.

HIS ROYAL HIGHNESS

THE PRINCE CONSORT

HAVING on several occasions expressed his desire to countenance and encourage everything calculated to improve our manufacture, and being a most successful competitor for prizes offered by the Royal Agricultural Society of England, and the patron of those who introduced improved machines to aid the operations of British farmers in the cultivation of the soil; and, aware as I am, that the Prince's Belgian countrymen are celebrated for their productions of Flax, and that they are very justly termed superior to any other nation in their management of the Flax crops, and the after preparation of the fibre, I was induced to believe I might take the liberty of presenting a copy of my work on the cultivation of Flax, spinning and weaving, to His Royal Highness, and having sent one forward to Buckingham Palace, I had the honour of receiving the following letter from Colonel C. B. Phipps, the Prince's Private Secretary:—

“Windsor Castle, February 4th, 1847.

“SIR,—I have received the commands of His Royal Highness the Prince Albert, to acknowledge the receipt of your letter, and also of your work upon the cultivation of Flax (which His Royal Highness has been pleased to accept), and for both of which I am commanded to return you the Prince's thanks.

“Permit, me at the same time, to give you my best thanks for the copy of your work, which you kindly forwarded to me.

“I have the honour to be, Sir,

“Your obedient and humble servant,

“C. B. PHIPPS.

“J. Hill Dickson, Esq.”

Being aware that our old farmers were as little inclined to purchase books as they were to read them, or believe in the benefit likely to be derived from the improved mode of cultivating Flax, or its after management, by my process, not then known; and finding that my friends, the Flax-spinners in Yorkshire and Lancashire, for whom I acted as agent (during ten years, from 1832 to 1842, residing in Belfast, Ireland, purchasing their Flax, selling their yarn, and employing seldom less than 2,000 weavers, making all kinds of linen goods)—agreed with me in opinion, that the circulation of 1,000 copies, free, to enterprising farmers, through Farmers' Clubs, and local Agricultural Societies, would help to remove their prejudice against Flax-culture, and cause its being more extensively grown in England, and as twenty-four of them subscribed £55 towards promoting the object I had in view, with several noblemen, land-owners, merchants, and Members of Parliament, who gave their names and influence to the same, I solicited His Royal Highness Prince Albert to patronise by his distinguished name the work contemplated, and was again honoured by the following letter:—

“Buckingham Palace, March 17th, 1847.

“SIR,—I have received the commands of His Royal Highness the Prince Albert, to inform you that His Royal Highness has been pleased to consent to your placing His Royal Highness's name at the head of the list of subscribers to your work upon the cultivation of Flax, &c., &c.

“I have the honour to be, Sir,

“Your obedient and humble servant,

“C. B. PHIPPS.

“J. Hill Dickson, Esq.”

FIRST SUBSCRIPTION LIST.
PATRONISED BY HIS ROYAL HIGHNESS
THE PRINCE CONSORT,
AND THE FOLLOWING NOBLE LORDS, &c.

	£	s.	d
The Right Hon. Lord Littleton, Haley Park	1	1	0
His Grace the Duke of Northumberland, Northumberland House ..	2	0	0
The Earl of Craven, Combe Abbey	2	0	0
The Earl of Carlisle, ——— London	1	0	0
The Right Hon. Lord Wenlock, Escrick Park, York	1	0	0
Lord Courtenay, Powderham Castle	1	0	0
Sir I. Stewart Richardson, Bart., Petfour, Castleperth	2	2	0
Sir E. B. Baker, Bart., Ramston, Dorset	2	0	0
Sir R. Newman, Bart., Mamhead Park, Exeter	1	1	0
Sir Thomas Tankard, Bart., Stratton, Cirencester	1	0	0
Sir Hick Beach, Williamstap Park	1	1	0
Sir W. Codrington, Bart, M.P., Gloucestershire	1	1	0
The Right Hon. W. E. Gladstone, Carlton House Terrace	1	0	0
A. Lawson, Esq, M.P., Knaresboro'	2	0	0
W. Aldam, Esq., M.P., Leeds	1	0	0
W. Forbes, Esq., Stirling	1	0	0
P. Pusey, Esq., M.P., Chairman of the 'Journal Committee of the Royal Agricultural Society of England, Pusey House, Farringdon	1	0	0
Col. Muir, M.P., Caldwell, Kempen	1	0	0
Col. G. Wynham, Petworth, Sussex	2	0	0
Col. McDowell, 2nd Life Guards, London	2	0	0
Lady Noel Byron, Leicestershire	1	0	0
T. Beale Brown, Esq., Salperton, Gloucestershire	1	1	0
W. Beach, Esq., Oakley Hall	1	1	0
R. Hunt, Esq., New Broad Street	1	1	0
J. J. Mechi, Esq., Tiptree Hall, Kelvedon	2	10	0
Messrs. Briggs and Co., Primrose Street, City	2	10	0
P. Lawson and Sons, Edinburgh	2	10	0
W. Crosskill, Beverley	2	10	0
Messrs Denton and Charnock, Wakefield	4	0	0
F. McNeil and Co., Bunhill Row, London	3	0	0
Thorp, Fallows, and Co., Baker Street, London	2	10	0
Farmers' Fire Insurance Company, Strand, London	4	0	3
The Mutual Cattle Insurance Company, Strand, London	4	0	0
W. W. Whitmore, Esq., Dudmaston	1	10	0

						£	s.	d.
E. D. Salesbury, Esq., Lancaster	...	...	...	...	...	1	0	0
Rev. I. Pearce, Folkestone	...	...	...	...	...	1	0	0
I. F. Elwes, Esq., Bossington	...	...	...	...	...	1	1	0
L. Houser, Esq., Johnston Castle, N.B.	...	...	...	...	...	1	1	0
A. J. Gordon, Esq., Naish	...	...	...	...	...	1	0	0
J. Cadbury, Esq., Birmingham	...	...	...	...	...	1	0	0
W. Woodward, Esq., Breadows, Norton	...	...	...	...	...	1	0	0
C. G. Sidney, Lord Provost, Perth, N.B.	...	...	...	...	...	1	0	0
John Jones, Esq., Welshpool	...	...	...	...	...	1	0	0
W. Bayley, Esq., Iver, Bucks	...	...	...	...	...	1	0	0
Thomas H. Keogh, Esq., Shrewsbury	...	...	...	...	...	1	5	0
W. G. Cherry, Esq., Buckland	...	...	...	...	...	1	0	0
W. Peel Croughton, Esq., Tenterden, Kent	...	...	...	...	...	1	0	0
G. H. Litchfield, Esq., Tetsworth	...	...	...	...	...	1	0	0
W. Johnson, Esq., Bath	...	...	...	...	...	1	1	0
Muspratt and Co, Liverpool	...	...	...	...	...	4	0	0

FLAX SPINNERS IN YORKSHIRE, LANCASHIRE, &c.

						£	s.	d.
Messrs. Hives and Atkinson,* Leeds	...	...	...	...	...	5	0	0
Do. Wilkinson and Co,* Leeds	...	...	...	...	...	5	0	0
Do. Waite and Wardell, Leeds	...	...	...	...	...	5	0	0
Do. Walker and Co,* Leeds	...	...	...	...	...	2	0	0
J. Gill, Esq.	...	...	...	...	...	2	2	0
Messrs. Hargreave, Foster and Smith, Leeds...	...	...	...	...	...	1	4	0
E. Tatham, Esq., Leeds	...	...	...	...	...	1	0	0
G. Hammond and Son,* Leeds...	...	...	...	...	...	1	0	0
J. Lobley and Co,* Leeds	...	...	...	...	...	1	0	0
W. B. Holdsworth and Co,* Leeds	...	...	...	...	...	1	0	0
Messrs. Foster and Davy,* Leeds	...	...	...	...	...	1	0	0
W. Renshaw and Co,* Manchester	...	...	...	...	...	5	0	0
Rylands and Son, Manchester	...	...	...	...	...	1	0	0
J. Brooks, Esq., Manchester and Bolton	...	...	...	...	...	1	0	0
German, Petty, and Co,* Preston	...	...	...	...	...	5	0	0
Hincksman, Furness, and Co., Preston	...	...	...	...	...	3	0	0
Lawrence Spencer, Esq., Preston	...	...	...	...	...	1	1	0
J. Dewhurst and Son,* Preston...	...	...	...	...	...	1	1	0
J. Birley and Sons,* Kirkham	...	...	...	...	...	5	0	0
W. Ullathorne and Co., Barnard Castle, Durham	...	...	...	...	...	1	1	0
T. Ainsworth and Co., Clayton, Lancashire	...	...	...	...	...	1	0	0
Waithman and Co., Yealand	...	...	...	...	...	2	0	0
J. and A. Brown, Dundee	...	...	...	...	...	1	0	0
Clark, Plummer, and Co., Newcastle-upon-Tyne	...	...	...	...	...	3	0	0

J. H. Dickson was agent for the firms marked thus * for ten years, until coming to London, in July, 1842, with a view to a Continental trade in Flax only, and the introduction of machines to prepare it.

Business having compelled me to visit Dublin in February, 1851, I was requested to attend meetings at the Irish Manufacture Board Rooms, Essex Bridge, and solicited to give a lecture on the advantages to be derived by the introduction of my process and inventions. I accepted the invitation, and attended in March, before a very numerous and influential meeting of landowners and merchants, when the following occurred :—

At two public meetings of the Board of Irish Manufacturers, held in Dublin in March 1851, Leland Crosthwaite, Esq., High Sheriff, in the chair; two lectures were delivered by me, on the improved method of cultivating Flax, and preparing it by my newly invented machine, were brought before each of the meetings; at the conclusion of which, a vote of thanks was passed unanimously by the meeting, and presented to me by the chairman; and the matter appeared to Mr. Crosthwaite (who was then the best spinner of Flax in Ireland, at Chapelized Mills) of such national importance, that it was then further agreed that 20,000 copies of my lectures should be published by the Board, and sent free by post to the clergy of every denomination in Ireland, to be distributed by them gratis in every parish, with a view to teaching my improved system of Flax culture; and several merchants at the meeting sent in their names with a desire to have copies of my second volume; and the press of Ireland were unanimous in opinion that the introduction of my machines were the first steps in the right direction, towards developing, by increased employment, the resources of the country, and they gave my views their hearty support in leading articles.

The Right Hon. the Earl of Clarendon, being then the Lord Lieutenant of Ireland, and the promoter of Flax, and every other improvement in Irish industry, had only to be

asked to patronise my efforts to circulate practical teachings along with the introduction of novel inventions, to grant the influence of his name; and in publishing the following list of subscribers to my second volume, I, at the request of the Bandon Flax Society, presided over by Lord Bernard, now the Earl of Bandon, visited Bandon and Cork.

LETTERS, WITH SUBSCRIPTIONS, ETC.

Having at the request of Lord Bernard, now the Earl of Bandon, visited Bandon in 1851, with a view to erect my patent machines for preparing Flax, and finding the farmers wanted instructions on the subject, the following are copies of communications from distinguished individuals, with their subscriptions towards promoting the object I had in view, viz.,—distributing to every farmer who may be induced to grow ten acres of Flax, instructions gratis, through the Bandon Flax Society, on the most improved mode of growing and preparing the plant, and spinning and weaving the fibre into all kinds of woven goods, as Flax prepared by my patents can be mixed with silk and wool, profitably.

Mansion House, Dublin,

27th March, 1851.

SIR,—I am directed by the Right Hon. the Lord Mayor of Dublin, to acknowledge receipt of your favour of the 24th instant, inclosing several documents relating to “Flax Culture and Manufacture” in Ireland, and I am directed by his lordship to enclose you the sum of one pound towards the furtherance of such object, at the same time expressing his sincere wishes for the prosperity of the undertaking. Please drop me a line to acknowledge receipt, and believe, me,

J. Hill Dickson Esq.,

28, Palmerston Place,

Upper Dominick Street, Dublin.

Your obedient servant

FRED. SUTTON.

Martimo, near Dublin,

2nd April, 1851.

SIR,—I have to apologise to you for having your interesting letter, of March 24th, so long unanswered, but I have been very unwell and totally unable to attend to anything. I sent your letter to a friend who thinks highly of your machinery; but amongst various projects just now laid before the public, on the subject of the culture of Flax and cotton,—he, like myself is very much puzzled what to advise.

As to myself, I am retired from all business, and have given up my farm on which I formerly grew Flax, and built a Flax mill, which was of great utility in the neighbourhood, but would be little now, in comparison with the great establishment of my respectable neighbour and tenant, Mr. Shaw ; but you have my best wishes, and if on inquiry I find I can be of any service, you shall hear from me again.

I have the honour to be, sir,

Your faithful servant,

(Signed.) CLONCURRY.

P.S. I enclose you half notes for £2. If you could invent a machine to prevent Irishmen from quarrelling, without knowing why, it would entitle you to the first prize at the exhibition.

J. H. Dickson, Esq.

Beaumont, near Dublin,

July 2nd, 1851.

SIR,—Long absence from home has prevented an earlier return of your letter and printed circular. I now enclose a first half of £1, my contribution to your very useful undertaking.

Believe me, sir,

Yours faithfully,

J. H. Dickson, Esq.

(Signed.)

ARTHUR GUINNESS.

Castle White, Cork,

5th July, 1851.

DEAR SIR,—I am in receipt of your letter, and am delighted to see you intend publishing a second volume of your work on Flax. Your first volume has much valuable information for the manufacturer as well as the agriculturist ; and I must confess when I first thought of becoming an extensive Flax grower, I drew largely from its stores. You may put me down for one pound subscription, and wishing you every success,

I am, dear sir,

Your obedient servant,

J. Hill Dickson, Esq.

(Signed.)

JOHN O'BRIEN.

The following communications were received by Mr. Dickson, from the Honourable Henry Boyle Bernard, and the Bandon Flax Association, presided over by Lord Bernard, Castle Bernard, Bandon.

Bandon, July 5th, 1851.

SIR,—I am much obliged by your letter and very interesting enclosures. You would be conferring a very great advantage upon our neighbourhood, if it was in your power, conveniently, to visit us now.

I have the honour to remain,

Your obedient servant

J. H. Dickson, Esq.,

(Signed.)

HENRY BOYLE BERNARD.

70, South Main Street, Bandon,

July 5th, 1851.

Sir,—We have pleasure to address you for the purpose of placing before you the annexed resolution adopted at the meeting of the Committee of the “Flax Association,” this day, and to request you will favour us with your reply on the subject, to enable us to convene a meeting of the committee in furtherance of the object therein contemplated.

We remain sir,

Very respectfully, yours,

(Signed.) JOSEPH THOMAS WHEELER, } Secretaries.
WILLIAM CONOR SULLIVAN, }

J. Hill Dickson, Esq.

At a meeting of the Bandon Flax Society’s Committee, held at the Devonshire Arms, on Saturday, July the 5th, 1851—the, Honourable Henry Boyle Bernard in the chair, it was proposed by William Connor Sullivan, Esq., and seconded by John O’Brien, Esq. :—

“That J. O’Brien having read to this committee a letter he had received from J. Hill Dickson, Esq., it appears essentially necessary to the prosperity of the Bandon Flax Society, that a further communication should be received from that gentleman; and it is hereby unanimously agreed that the secretaries write at once to Mr. Dickson, requesting that he will be so kind as to name an early day to meet the Bandon Committee; and further, that he will be so good as to allow the committee to defray any expense he may incur (if so obliging) as to agree to their request.

(Signed.) HENRY BOYLE BERNARD,

Chairman.

Colemain, Cork,

September 3rd, 1851.

SIR,—The Bandon Flax Society Committee, at their last meeting, passed a resolution requesting you would be so good as to allow them to become patrons of the work you intend to publish, on the question of Flax.

I shall feel obliged by your adding to your list, the names of the Earl of Bandon, Viscount Bernard, and my own, with a subscription of £1 from each. We trust a book which is calculated to be of so much value, may be soon in very extensive circulation.

I have the honour to be,

Your obedient servant,

(Signed.) HENRY BOYLE BERNARD.

J. Hill Dickson, Esq.

Hollybrook, Skibbereen, 18th September, 1851.

SIR,—Being deeply interested in subjects calculated to improve the condition of this country and its people, and knowing as I do, that this portion of it, once enjoyed prosperity; and when the linen trade flourished a large proportion of rent was paid by Flax. I have great hopes that the active exertions you now are making to induce northern Flax spinners and manufacturers (men of capital and enterprise) to come and erect machinery to prepare and spin Flax in Carbery or Bandon, may be successful, for I can speak from practical knowledge, since I erected a Flax scutching mill, on Hollybrook, I feel confident that the condition of the farming classes, and the labouring population, will be made better, by the introduction of Flax culture, and the revival of the linen trade; and as such a result will in all probability follow, if aided by sound instructions and the introduction of machinery, I have great pleasure in being a subscriber to your work on the subject. Having witnessed the good effects of such industry in Ulster, I look forward in anticipation that similar advantages may yet be extended to Munster. Wishing you every success,

I am, etc.,

Your obedient servant,

J. Hill Dickson, Esq.

(Signed.)

R. H. H. BEECHER.

Carlton Club, October 21st, 1851.

SIR,—I shall have much pleasure in subscribing to the book you mention, and should wish my name to be put down for a donation of £3. With respect to the mills, I should for the present not like to order one, although I am fully aware of its valuable properties. Unworthy as I am of the encomiums you are pleased to bestow upon me, I view the value of Flax culture in the same light as you do, and am equally anxious to promote it.

I am, your obedient servant,

(Signed.)

LANESBOROUGH.

Mr. J. Hill Dickson.

SECOND EDITION AND SUBSCRIPTION LIST.

PATRONISED BY HIS EXCELLENCY THE

EARL OF CLARENDON,

LORD-LIEUTENANT OF IRELAND, 1851.

His Excellency the Earl of Clarendon, Lord-Lieutenant of Ireland,							
Castle, Dublin	...	...	...	...	...	3	0 0
The Right Hon. Sir W. Summerville, Secretary for Ireland, Dublin							
Castle	...	...	...	...	...	2	0 0
The Right Hon. Lord Mayor, B. Lee Guinness, Manor House, Dublin							
Doctor Hyden, M.D., Harcourt Street, Dublin	...	...	...	...	...	3	0 0
Captain H. Macmanus, Harcourt Street, Dublin	...	...	...	...	...	3	0 0
Doctor James Dickson, M.D., Ballinahinch	...	...	...	...	...	2	0 0

	£	s.	d.
Messrs. Guinness and Sons, Brewers, James' Gate	2	0	0
Arthur Guinness, Esq., Stilorgan	1	0	0
The Right Hon. Lord Mayor Elect, Alderman D'Arcy, Thomas Street, Dublin	1	0	0
Alderman George Roe, Distiller, Thomas Street, Dublin...	1	0	0
Alderman Hutton, Summerhill, Dublin	1	0	0
Messrs. Pim and Co., Merchants, Dublin	1	0	0
Messrs. Jameson and Co., Distillers, Dublin	1	0	0
Messrs. Todd, Burns, and Co., Merchants, Dublin	1	0	0
H. Drury, Esq., Silk Merchant, Dublin	1	0	0
The Right Hon. Lord Cloncurry, Marotimo, Dublin	2	0	0
The Right Hon. Lord Talbot de Malahide, Castle Malahide	1	0	0
The Right Hon. Earl of Lanesborough, Belturbit	3	0	0
The Right Hon. Earl of Bandon, Castle Bernard	1	0	0
Lord Bernard, Castle Bernard	1	0	0
The Hon. H. B. Bernard, Coolmain	1	0	0
The Bandon Flax Society, Bandon	5	0	0
John O'Brien, Esq., Castlewhite	1	0	0
C. Cotton, Esq., Cork	1	0	0
M. Brown, Esq., Cork	1	0	0
R. H. H. Beecher, Esq., Skibbereen, Cork	1	0	0
H. Fitzmaurice, Esq., Carlow	1	0	0
J. Herdman, Esq., Flax-spinner, Belfast	1	0	0
Messrs. Warthman and Co., Flax-spinners, Yeland	2	0	0
Messrs. W. Renshaw and Co., Flax-spinners, Manchester	5	0	0
Messrs. Stevens, Brothers, Hemp Merchants, Bombay and Liverpool	5	0	0

23, St. James's Square,

July 21st, 1862.

SIR,—Having found a memorandum relating to my promised subscription of 1858; I send you the sum of £10, and request a receipt. With reference to any claim which you may have upon the India Office, I cannot interfere, but I have no doubt that it will be justly dealt with by those now in authority.

I remain, Sir, your obedient servant,

STANLEY.

Mr. J. H. Dickson.

India Office, Dec. 9th, 1863.

SIR,—In reply to your letters of the 30th ultimo and the 3rd instant, I am directed by the Secretary of State for India in Council to inform you, with reference to my letter of the 26th of September last, that on your forwarding to this office 198 complete copies of your work on fibres, in the state in which

you propose to issue them to the public, an order for the sum of £66 (sixty-six pounds) will be transmitted to you.

The samples of yarn and cloth made from Indian fibre by cotton machinery, which accompany your letter, have been placed before Sir Charles Wood.

I am, Sir, your obedient servant,

HERMAN MERIVALE.

Mr. J. H. Dickson.

THIRD EDITION OF SUBSCRIPTION LIST.

Additional subscriptions to Dickson's work on Flax-culture, including his mode of preparing rheea, and other East and West Indian Fibres, as substitutes for cotton and Flax, proofs of which have been at the offices of the Privy Council for Trade, Whitehall, and are now in the rooms of the Cotton Supply Association, Manchester.

	£	s.	d.
The Right Hon. Lord Stanley, Secretary of State for India	10	0	0
The Hon. the East India Company having received specimens of all the Indian fibres alluded to, prepared by Dickson's patent machines and liquids, and also yarn, cord, ship canvass, and drill cloth, made by him from wild rheea (assam grass), and from wild pine-apple, resolved, with a view to circulating gratis, in India, the value of such fibres, when prepared by Dickson's process, for our manufacturers, to subscribe to his work on the subject, the sum of (now payable at the India office, by order Sir C. Wood)	66	0	0
Colonel Marks, a member of the Canadian Government, and William Ferguson, Esq., President of the Provincial Agricultural Association, Kingston, Canada West, America	10	0	0
T. Beale Brown, Esq., Salperton, Gloucestershire, who got Dickson's first Flax mill, in 1847, and exhibited at the Northampton Agricultural Show	5	0	0
Messrs. Hives and Atkinson, Flax-spinners, Leeds	5	0	0
Messrs. Stolterfaught, Sons, and Co., Liverpool	1	1	0
J. Hardy Wrigley, Esq., J.P. and D. L., Southport, Lancashire	5	0	0
Messrs. Atkin and Son, Fleet Street, London	1	1	0
Capt. C. W. Daldy, Agent General, Auckland, for the Mechanics' Institute, three copies	1	2	6
Messrs. W. and A. McArthur, merchants, Sydney, and Moorgate-street, London, six copies	2	5	0

N.B.—The patent machines are on wheels, and may be moved about by one horse, from farm to farm, the same as a portable thrashing machine.

EXHIBITION OF LOCAL INDUSTRY, LEEDS.

SEPTEMBER, 1858.

As I was the first to cause bales of Indian rheea and other fibres, prepared by my patented inventions, to be exhibited in Yorkshire, I felt annoyed by the conduct of the editor of the "Leeds Mercury," by a very partial report that appeared in that journal, all in favour of one firm, as exhibitors, just as if no other of the numerous exhibitors had anything worthy of the notice of the much lamented Prince Consort, who countenanced by his visit the undertaking, and I published through other journals the following letter and the reply.

5, Bishopgate Street, Leeds, 9th September, 1858.

SIR,—As I am an exhibitor in the department over which you preside in the "Exhibition of Local Industry," I beg leave to draw your attention to a report in this day's "Mercury" of the Prince Consort's visit, which report, in my humble opinion, is partial and very unfair, not only as regards myself, but also as regards Messrs. Tatham, Titley, and Walker; Messrs. Holdsworth and Co.; Messrs. Hives and Atkinson, whose yarns are on Mr. Pegler's stall; Messrs. Booth and Co., whose linens are also on the same stall, and Mr. Boyle, who has superior and much finer cloth than Messrs. Marshall and Co., can produce. I am inclined to think that the above-named firms will not submit to the "Mercury" selecting Messrs. Marshall and Co. as the only exhibitors of linens and yarns; and I shall feel obliged if you will be so kind as to inform me whether the Prince Consort's attention had been directed to my case of Indian fibres, and the yarns and cloth made from them, all of which I had reason to hope would have been placed before the Prince Consort, because of their being the only specimens from our Indian empire in the exhibition, and may be had one-third cheaper than Flax. Your answer will oblige,

Your obedient servant,
J. HILL DICKSON.

J. C. Knight, Esq., 39, Briggate, Leeds.

P.S.—The card enclosed describes what I have in the exhibition, and the index shows that I have the honour of the Prince Consort's patronage, and also the East India Company's, towards promoting my object of free circulation in India, of instructions on the preparation of Indian fibres.—J.H.D.

39, Briggate, Leeds, 9th September, 1858.

SIR,—I am in receipt of your favour of this day, and having communicated

with Mr. Lupton, I am happy to be able to inform you, that the attention of his Royal Highness the Prince Consort was particularly directed by Mr. Lupton to your case.

I am, sir, your obedient servant,

J. Hill Dickson, Esq.

J. C. KNIGHT.

At the Leeds exhibition I was enabled to have, through the courteous attention of Sir W. Hooker, from the Royal Gardens, Kew, a great variety of fibre yielding plants, which I prepared by my patent machine and liquid, by keeping one end in the green unprepared state, whilst the other ends of many were, when prepared, as fine as silk. My next exhibition was in 1862 at

THE BOARD OF TRADE, WHITEHALL.

I submitted a box filled with my specimens in every stage, and a book containing on every leaf, yarns and cloth in great variety, from rheea, plantain, wild hemp, Flax, &c., to Her Majesty's Privy Council for Trade, which had their inspection for six months, up to the 26th May, 1862, when all was returned to me with a letter of expressed confidence in the value of my production, and I regret to add, that there, all my successful labour ended, as no member of Her Majesty's Government could be worked on to countenance or give any encouragement to the introduction of the new material.

I must now in conclusion do that which I rejoice in saying every man has the right to do in this free country, to express in a respectful manner his opinion on the capability or incapability of public men, especially if they are the paid servants of the Crown, and as what I know of the great abilities of *one* who is my much respected countryman, and I have watched with pleasure his movements and read his speeches on every subject he thought worth grappling with for the last thirty years, I am thoroughly convinced that if "the right man was in the right place," Sir James Emerson Tennent would be, either as President of the Board of Trade or Secretary of State for India. If such a gentleman of real talent and official business habits were selected, the manufacturing interests of Dundee,

Glasgow, Manchester and Belfast would be attended to, for it is well known that Sir James is aware of the value of the raw material of Flax and cotton, and the fibres of India and our colonies, as if he had been brought up in early life a spinner, and his examination as a witness on the questions now brought before the public respecting the joint or independant working, or position of the Foreign office and the Board of Trade functions, tells the country that he should be the "coming man."

LETTERS FROM SPINNERS OF COTTON, SILK, WOOL,
AND FLAX, WHO HAVE SPUN AND WOVEN THE FIBRES
OF INDIA, FLAX AND HEMP WHEN COTTONIZED
BY J. H. DICKSON'S PATENTS;

ALSO TESTIMONIALS AS TO THE VALUE OF THE MACHINES AND
PRODUCE FROM A GIVEN WEIGHT OF RAW MATERIAL, AND
THE OPINION OF THE PRESS IN ENGLAND.

My first venture out to the manufacturing district with a view to having my cottonized rheea, Flax, and hemp, spun on cotton machinery, commenced on the 16th May, 1862.

Having met by appointment John Crossley, Esq., then Mayor of Halifax (one of the firm of Messrs. J. Crossley and Sons, the eminent carpet manufacturers), at their office in Cannon Street, London, I found that gentleman equal to all that is said of him as to affability, and a desire to aid in everything calculated to do good, and by his invitation I left that evening in the same train with him for Halifax, having sent two small bales of my prepared rheea and plantain previously to their works, and in a few days, through the more than common attention of another gentleman of the firm, Mr. Joseph Crossley, I had my rheea and plantain spun into yarn, and by the kind advice of Mr. Joseph Crossley, whose hospitality I shall not forget, because I feel grateful for the honour and attention conferred, I left for Manchester and Preston, to push my way amongst the fine spinners in Lancashire, where I was still more successful at Messrs Eirley, Brothers', cotton-spinning mills in Preston.

COPY OF LETTERS FROM TWO OF THE MOST EXTENSIVE
SPINNING AND MANUFACTURING FIRMS IN YORKSHIRE,
WHO HAVE SPUN INDIAN RHEEA FIBRE, PREPARED BY
J. HILL DICKSON'S PATENT, ON COTTON MACHINERY.

Dean Clough Mills, Halifax,

Mr. J. Hill Dickson,

May 31st, 1862.

SIR,—We have tried the bag of rheea fibre, and find we could use it in large quantities, if it could be had at a suitable price.

We are, Sir, yours respectfully,

(Signed)

JOHN CROSSLEY & SONS.

[It cost the patentee 6d. per lb. when made suitable for being spun on cotton machinery.]

Flush Mills, Heckmondwicke,

Mr. Riches.

July 29th, 1862.

DEAR SIR,—The writer only returned home to-day, after several days' absence, in the meantime yours of the 22nd and 26th are to hand.

The results of our experiments satisfied us as to the rheea being useable into low blankets, and we send you one per rail. It is made from one-quarter rheea, but the blanket finishes coarser than wool only—it makes it coarser in appearance, whilst cotton makes it finer. It is so tough also, that in raising the nap it has driven somewhat, as you will see by looking through. If it could be split up finer, it would allow of its being used with finer wool, and the fault in running we could get over by a different plan of treating it, we believe.

The writer had the pleasure of meeting Mr. Dickson in Liverpool last week, and expected to have heard from him when he came forward into Yorkshire, which he was purposing doing.

When you are in a position to offer anything, we should be glad to hear from you.

We are, Dear Sir, yours truly,

(Signed)

EDWIN FIRTH & SONS.

The rheea supplied to Messrs. Firth and Sons was only half prepared; had it been combed, it would have been three times as fine, therefore there is no difficulty to be got over. It was prepared for worsted spinners, and not prepared by the cottonizing liquid, by which it is made as soft as cotton.

Mr. Bazley, M.P. for Manchester, the most active spinner of cotton in that city, in favour of having a supply of cotton independant of America, thought it impossible that I could have my rheea or such fibre spun on cotton machinery, and wrote me

to say " It could never be brought into the industry of that district; that it was only adapted for Flax-spinners." I wrote him in June to inform him of my success in having it spun by the Messrs. Crossley and Sons, of Halifax, and received the following :—

New Bridge Mills, Manchester,

June 21th, 1862.

SIR,—I am honoured by your communication of the 26th instant, and I beg to congratulate you upon the success which you report to me.

I am, Sir, faithfully yours,

(Signed)

THOMAS BAZLEY.

Mr. J. Hill Dickson.

Being then in Manchester, determined to have my Indian fibres spun on the finer description of cotton-spinning machinery, but finding after several weeks trial that nothing but cotton could be believed in, I despaired of doing anything in the great cotton cloth mart, until I chanced to learn that my old but early in life friends had turned cotton-spinners as well as Flax, and I met two of the firm on 'Change, and being told by Mr. Thomas and Mr. C. Birley that I should have all the assistance they could give at their mills, I accepted the invitation of Messrs. Birley Brothers, cotton-spinners, in Preston, who are also Flax-spinners in Kirkham (for whom I was agent in Belfast for many years, up to my leaving in 1842 for London), to have my material tried at their works, and having spent nearly three months in that quarter, I at last saw my way to success in their mills, and also in the mills of Mr. W. Paley, where I had French hemp and Flax from green unretted straw into a sliver, as perfect as any cotton could be made, and as I had a considerable quantity of rheea spun by the Messrs. Birley, I left for Liverpool in October, and the following week had 100 spools of yarn sent me, with the following letter :—

Hanover Street Cotton Mills,

Preston, November 4th, 1862.

DEAR SIR,—We duly received your letter this morning; no one being at the mills to-day, we merely send you the yarn we have spun as requested. There

are two bundles, the one contains yarn made from half cotton, half rheea, the other from two-thirds cotton, one third-rheea. The rheea was much heavier than cotton, we make the counts Nos. 15 and 12½.

We remain, yours truly,

Mr. J. H. Dickson.

BIRLEY, BROTHERS.

Commercial Hotel, Liverpool.

On receiving the yarn, I sent it to firms in Lancashire and Yorkshire, along with yarns all rheea fibre, and had it woven into cloth, plain and twilled, samples of which I sent to Her Majesty's Ministers; how it has been examined, and the matter of my labours for a national gain by the government of the day, remains to be seen, at the coming session of Parliament, more on this is unnecessary.

NEW ZEALAND FLAX (*PHORMIUM TENAX*).

This very extraordinary plant, so difficult to do anything with, after giving many like myself great trouble to discover the way to make it marketable as an article for spinning purposes, I turned my attention to, after having dropped or left off all idea of touching it, after many trials in 1855 and 1856, but finding my improved machinery could make the article marketable without steeping, I continued my course until I have done all as I could desire, because of the following facts.

The article is gathered by the natives, and sold in Auckland by them at £10 per ton, and as the New Zealand government has taken the wise and business-like course to cause the fibre plants of the country to be brought into a state for exportation to England, by an offer of a reward of £2,000 to the first person who will, by his own invention, produce forty tons of the *Phormium Tenax*, so prepared as not to exceed £25 per cwt. in cost making, ready for market, and £1,000 reward to the next five persons who may join and work up twenty tons by any one's invention so as to produce the same advantage, Such rewards has induced me to "try again," and the result of my labours on a bale sent me by Messrs. Gibbs, Bright, and Co., of

Liverpool, has caused me to receive from one of the best judges of Flax in England the following letter:—

Alma Terrace, Kensington, October 17th, 1863.

DEAR SIR,—The sample of New Zealand Flax (*phormium tenax*) you have sent me may be worth from £40 to £50 per ton for coarse spinning purposes, but much depends on how it turns out in heckling; the finer quality is in my opinion worth about £60 per ton.

Yours truly,

(Signed.) J. R. W. ATKINSON.

Mr. J. H. Dickson.

Mr. Atkinson is the retired partner of the firm of Messrs. Hives and Atkinson, Flax-spinners, Leeds, whose yarns are not equalled by any firm in the trade, therefore, such an opinion must be sufficient evidence of the value of my machines and process.

As a practical man, I am confident that the (*Phormium Tenax*) New Zealand Flax must come in for the trade of Dundee, over the head of Flax, as jute by itself can never, so long as it is ruined in India by the retting or steeping system, be worked as a warp yarn, unless mixed with Flax.

My late experiments on the New Zealand Flax has lead to my making the hard plantain or Manilla hemp, that never has been split or heckled, as soft and short as cotton. I sent a sample to Mr. John Crossley, of Halifax, a few weeks ago, as fine and soft as cotton wool.

I now finish my labours by calling the better attention, and especially the landowners of Ireland, to our own country fibre.

HOME-GROWN FLAX AND HEMP, COTTONIZED.

These materials, which we can grow to any extent in Great Britain and Ireland, at 6d. per lb. or £56 per ton (the average price that the Irish hand-scutched Flax is now selling at this date, 26th of December, 1864, in Armagh, my native city), it will pay farmers to grow it better than a crop of oats, if sown on wheat or barley stubble, and if pulled rather green, not fully ripe, and prepared by my patented machines and liquid, it can be made as fine as the finest cotton, and when submitted to the process of cottonizing by the machine for shortening it, it will be as easily spun on cotton machinery as

Sea Island cotton, and I am prepared to supply a simple and moveable apparatus, to be fixed at pleasure to each cotton and spinning frame, that will enable the manager or spinning-master to spin as fine yarn from Flax on cotton-spinning frames, and as well adapted for combric warp yarn as the best that can be spun, by Messrs. Marshall and Co., of Leeds, or Messrs. Hives and Atkinson, of Leeds, whose yarns I always found superior to any I ever used for fine linen goods.

TESTIMONIALS.

Copy of a letter from T. H. Sothern, Esq., M.P. for North Wilts, the original of which was placed before His Excellency the Earl of Clarendon, Lord-Lieutenant of Ireland, in 1851, with a view to Dickson's hand-breaking and scutching-machines being introduced into the workhouses in Ireland, to employ the inmates.

SIR,—You erected for me in three days, on my farm at Bowden Park, near Chippenham, in the year 1847, a mill for bruising Flax, and another mill for scutching Flax, driven by a steam-engine of 5-horse power. I have worked these mills constantly since that period, and have found that they do the work very well indeed.

I am, Sir, your obedient servant,
(Signed) T. H. S. SOTHERN.

J. Hill Dickson, Esq.,
Palmerston Place, Dublin.

Copy of a letter from T. Beale Browne, Esq., Andoversford, Gloucestershire, who gave his order on seeing the drawings, and has still at work the first Flax-mills invented by Dickson, and worked in the Royal Agricultural Society's Show Yard, at Northampton, in 1847.

Hampen, Andoversford, Gloucester,
October 15th, 1847.

DEAR SIR,—I am sorry I could not give you any information of the mills before, as unfortunately the horse-power of my threshing-machines was broken before the Flax-mill was erected, and this has caused so much delay. You will be pleased to hear that it has far exceeded my expectations, and nothing can exceed the beautiful manner in which the breaking-mill, as well as the scutching-mill works. The man from the north of Ireland, who came to me

with a high character, says it is far superior to any of the mills there, and its cost is not more than half one of those. I send you a specimen of the Flax of this year's growth, John considers it equal to the best Irish Flax, and says the mill in breaking, wastes less and cleans it better than any mill he has seen. I send you these particulars, knowing it will give you satisfaction. I only wish I had planted twenty acres more Flax this year.

I am, dear Sir, yours very truly,
(Signed) T. BEALE BROWNE.

Copy of a letter from Dr. J. F. Royle, of the Honourable the East India Company.

East India House, Feb. 25th, 1855.

SIR,—I have received the specimens of East India fibres, which you have been good enough to put through your machines and liquid. The effect is marvellous on many of them, and I feel from what I have seen that your management must be admirable to convert such ugly looking fibres into silky, hair-like material. The other Flax fibres I have also looked at, and admire them much; there is a great abundance of fibres in India well worthy of the attention of merchants.

Your obedient servant,

Mr. J. Hill, Dickson, (Signed) J. F. Royle.
Proprietor, British and Foreign Hemp and Flax Works,
Office, 4, Stanley Terrace, Lower Road, Deptford.

Copy of a letter from Bombay and Liverpool merchants, importers of Indian fibres.

J. Hill Dickson, Esq.,
British and Foreign Hemp and Flax Works,
Office, 4, Stanley Terrace, Lower Road, Deptford.

Liverpool, April 8th, 1857.

DEAR SIR,—We have pleasure in being able to certify as to the value of your small breaking-machine, which you stated was protected under the old Patent Law in 1852; our Mr. Stevens, of Bombay, spent several hours daily for a week at your factory, to satisfy himself as to the work performed by this breaker and your scutching-machine, and as we had some forty bales of Bombay hemp re-dressed which was only worth £14 or £15 per ton, but which after being dressed by you was sold by Mr. J. A. Beneke, hemp and Flax broker, Liverpool, and also in London, at £34 to £35 10s. per ton, we cannot but express our entire satisfaction with the produce and profit of your inventions, and are not surprised to hear, as you state, that the India aloe fibre, worth here £10 per ton, should be bringing £28 per ton in London after being re-dressed by your patent machines.

Yours truly,
STEVENS, BROTHERS.

The cost of re-dressing hemp and Alloa fibre is £4 10s. per ton.

The following has been the result from the re-dressing of forty-three bales of Bombay native prepared hemp, part sold in Liverpool last November by the owners, Messrs. Stevens, Brothers, Liverpool and Bombay merchants :—

To 144 cwts. 3 qrs. 21 lbs. of hemp, at 15s. per cwt. . . .	£108 14 0
Cost of preparing, baling, and carriage, at £4 1s. 8d. per ton . . .	29 11 9
	£138 5 9

					cwt.	qrs.	lbs.
By weight, when re-dressed—Hemp					101	3	21
Ditto Tow					18	2	0
Loss or waste					24	2	0
					144	3	21

By sales in London and Liverpool—Hemp, 101 cwt. 3 qrs. 21 lbs.

at £35 10s. per ton	£180 18 9
Tow, 18 cwt. 2 qrs., at 18s. per cwt.	16 13 0
	£197 11 9
Deduct cost of material and re-dressing.	138 5 9

Net profit £59 6 0

As a set of three breaking-machines at a cost of £1,000, will prepare and make ready for market, from five to six tons of hemp per week, it is evident from the work produced as above, that £3,000 per annum may be obtained by working them on rough hemp alone.

The “Daily News” of last month quotes the the price of Bombay hemp in India at £9 per ton. The price in Liverpool runs in general from £18 to £20 per ton, and a plentiful supply at all times can be had in that market.

P.S.—We have just been informed that Mr. Stevens, of Liverpool, placed the Bombay hemp, after being prepared by the patent machines, before nine extensive rope-makers in Liverpool, and only one out of that number could guess what it was, so great was the alteration, but all agreed it was worth from £36 to £40 per ton.

CUVERIAN SOCIETY.

At the first meeting of this society for the sessions 1857-8, which took place at the Royal Cork Institution, on Wednesday, 4th November,

Mr. H. Biggs produced some very beautiful specimens of Indian grass, prepared by a new patent process, so as fully to warrant the term of Vegetable

Silk, applied to it by the ingenious and talented patentee, Mr. J. H. Dickson. The samples were shown with an end of each in a raw state, while the other end was finished in the most exquisite style, each sample exhibited a different tint of the most brilliant colour and silky fineness, those colours and finish are said to be indestructible.

Mr. De Cook Kenefic, who was present, and whose acknowledged experience cannot be doubted, spoke warmly in favour of the success of this most useful invention, and highly extolled the extraordinary beauty and strength of this fibre. We are proud so say that Mr. Dickson, who visited this city a few years since, is an Irishman, and one whose indefatigable exertions and industry we have no doubt will be fully rewarded, as it so richly deserves to be.—“Cork Advertiser,” November 26th, 1857.

EXTRACT FROM THE GARDENER'S CHRONICLE AND AGRICULTURAL GAZETTE,

EDITED BY PROFESSOR LINDLEY AND J. C. MORTON, Esq.,
Saturday, August 16th, 1862.

*Instructions on the most improved mode in the Cultivation,
Cottonizing, and otherwise Preparing of Flax for Spinning, &c.
Also instructions on the mode of separating the Flax and
Hemp fibre from the wood on which it is produced, &c.*

By J. HILL DICKSON.

The above are a few words only of a most elaborate title page, in which the contents of a very full and instructive work are described. Mr. J. H. Dickson was a constant correspondent of the “Agricultural Gazette,” twelve or fourteen years ago, when Flax culture was more industriously and importunately advocated than it is now. There are, however, districts large enough where the cultivation of it is still maintained, and where the cultivators of it are numerous enough to ensure a sale for a very explicit book of instructions. And accordingly this volume—a second edition of one formerly noticed in our columns as containing such instruction, together with much other useful information—is likely to obtain a ready sale.

Mr. Dickson has invented machinery and processes by which Flax and other fibres are brought into such a condition as enables them to be dealt with and manufactured by cotton machinery. And as his book is likely to induce the cultivation of such fibres, good would no doubt be done by its general circulation both in this country and our colonies. Failing cotton, the next best thing seems to be these fibres treated by Mr. Dickson's process. He has forwarded to us specimens which have been prepared by him from the rheea—an Indian plant—of which a large supply, were it available, being con-

vertible by Mr. Dickson's process, would go far to see the cotton mills to work again. Mr. Dickson has had long experience both in the growth and manufacture of Flax, and his book would no doubt be of service both to growers and manufacturers, were it widely distributed and read both in our colonies and at home.

The specimens sent to the "Gardener's Chronicle and Agricultural Gazette" Office were in the prepared state, ready for being spun; also yarn and cloth that the patentee had made by the use of cotton, silk, worsted, and Flax machinery.

THE *PRESTON PILOT*, SATURDAY, SEPT. 20th, 1862:
SUBSTITUTES FOR COTTON.

We wish to call the attention of our readers to a letter in another column from Mr. J. H. Dickson of London, on the important question of cotton supply, or the supply of cotton substitutes. Mr. Dickson has sent to our office a book of samples, of yarn and cloth, made under his own patents, from materials which he proposes to use as a substitute for cotton. These samples appear to have been for some weeks at the Board of Trade, and to have been brought before the notice of her Majesty's ministers; they have also been exhibited in Liverpool, and though we do not profess to be able to judge of the value of this new production, or its adaptability to cotton machinery, we can say that from what we can see from a brief examination of the material it seems to bear more the appearance of silk or wool than the short staple of cotton, which accompanied the specimen, sent with it to compare as to its strength. We shall be very happy to shew it and the wool which Mr. Dickson has had spun on cotton machinery to any of our readers who feel interested in the subject. We have also seen another fibre prepared for spinning under Mr. Dickson's superintendence, which can be obtained immediately in thousands of tons, and we are informed that in a few days yarns shall be made from it and sent to our office for the inspection of the cotton-spinners of this district or any other persons interested in the matter. The discovery of an effective substitute for cotton is a matter of such vital importance to the commercial prosperity of this county, that any proposal to introduce a new material which shall answer all or any of the purposes of cotton is deserving of the best attention.

EXTRACT FROM THE *LIVERPOOL MERCURY*,
JULY 25TH, 1862.

The Editor having examined the large Book of Specimens that had been inspected by Her Majesty's Ministers, at the offices of the Board of Trade, Whitehall.

COTTON AND ITS SUBSTITUTES.

The present dearth of cotton, and its ruinous consequences in the manufacturing districts, are subjects which naturally claim a large share of public attention. While fresh sources of cotton supply are being sought, the desirability of finding a substitute for it has not been overlooked. A patent has been taken out by Mr. J. Hill Dickson for the treatment of new textile materials, so as to render them applicable to all the purposes for which cotton is now employed. This is effected by machinery applied to the breaking and cleaning of the fibre, making it perfectly fit for spinning on the ordinary machinery now in operation at all the large mills. The chief material which the inventor proposes to substitute for cotton is the rhea fibre. The plant is found in tropical countries, more especially in the East Indies, where it might be cultivated to an unlimited extent. Yesterday we had an opportunity of examining some specimens of the new fibre in every stage of preparation, from the yarn up to the more complete process of its manufacture into cloth. So far as can be judged from the samples, Mr. Dickson's patent appears to offer the advantages which he claims for it. Experiments have already been made by several large manufacturers, and we understand the result has been highly satisfactory as to the success of the new patent. Another advantage would be the cultivation of the rhea fibre in our own colonies, where large tracts of waste land might be brought into requisition and rendered productive. In another column will be found a letter from the patentee, which is worthy of perusal by all who take an interest in the subject of the cotton supply, and the best means for meeting the present emergency.

The rhea plant can be produced in Jamaica, and be had in England in four months from the time it has been planted, and will pay the producer 50 to 80 per cent. if he gets $2\frac{1}{4}$ d. per lb. for it delivered in London; and as "the government of Ceylon is giving very liberal grants of land—and in this it was actively supported by the Home Secretary, the late Duke of Newcastle—with a view to encourage cotton cultivation," the matter of rhea culture is certain to meet with similar consideration, if its real value as a substitute for cotton be brought out, as I now have done it, by spinning it into No. 30 yarn on Throstle and self-acting mules, at the cotton-spinning mills of Messrs. Birley, Brothers, Preston, on the 22nd of August 1863.

J. HILL DICKSON.

UNIVERSITY OF CALIFORNIA LIBRARY
BERKELEY

Return to desk from which borrowed.

This book is DUE on the last date stamped below.

RECEIVED

4 Apr '52
Apr 11 '52

12 Nov 52 HD

OCT 29 1952 LD

AUG 26 1966 9 2
RECEIVED

AUG 12 '66 -4 AM
LOAN DEPT.

MAR 10 1987 1 2

FEB 24 '67 -9 PM

LOAN DEPT.

INTERLIBRARY LOAN UC INTERLIBRARY LOAN

MAR 25 1993 11:0V 8 1990

UNIV. OF CALIF., BERKELEY

446622 SB
241
D5

THE UNIVERSITY OF CALIFORNIA LIBRARY

